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**Comparison of RCRA SWMU Corrective Action
and CERCLA Remedial Action**

by

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I. Introduction

With the passage of the Hazardous and Solid Waste Amendments of 1984 and the addition of expanded authorities to require corrective action for releases of hazardous constituents from solid waste management units (SWMUs) at hazardous waste treatment, storage, and disposal facilities, the Solid Waste Disposal Act (hereafter referred to as the Resource Conservation and Recovery Act or "RCRA") will dramatically influence the Superfund program under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Not only will the RCRA corrective action program help prevent current RCRA sites from becoming Superfund sites, but it also offers EPA and the states an important alternative to address Superfund sites that already exist. EPA recognized this and, hoping to conserve Superfund resources, developed a policy to defer listing of sites from the National Priority List if those sites can be addressed under RCRA's corrective action authorities. Private industry and federal agencies with problem sites that could qualify under either program need to compare the advantages and disadvantages of each program. EPA's deferral policy continues to evolve and appears to be ripe for expansion.

1990 was a significant year for RCRA and CERCLA. EPA's blueprints for RCRA's SWMU corrective action program and CERCLA's National Contingency Plan (NCP) were promulgated during the year. They detailed how both programs would be implemented and revealed significant insight on how the two programs could interact. Despite EPA's insistence that the programs were intended to be substantially equivalent in their approach, interesting differences are detectable. The significance and scope of those differences will not be known until EPA implements both blueprints over time. The purpose of this thesis is to compare both programs and evaluate the current deferral policy.

The approach taken in this thesis, as laborious as it may seem, is to review the RCRA Subtitle C hazardous waste management program in Sections II and III of this thesis, the recently proposed

corrective action rule in Section IV, key portions of CERCLA and the NCP while noting comparisons with RCRA corrective action in Sections V and VI, and evaluate EPA's deferral policy in Section VII.

II. RCRA - Subtitle C Hazardous Waste Management Program

A. Background

The Solid Waste Disposal Act (SWDA) was originally enacted in 1965 as part of a bill amending the Clean Air Act.¹ At that time, the SWDA was not a regulatory statute. It was directed toward federal research in resource recovery systems and promotion of state and local solid waste management.

In response to growing concern over increased solid and hazardous waste residuals resulting from anti-pollution efforts in the Clean Water Act and Clean Air Act, Congress formally amended the SWDA in 1976 with the passage of RCRA.² Signed into law by President Ford on October 21, 1976, RCRA essentially replaced the SWDA. RCRA's Subtitle C was the first major Congressional effort to comprehensively regulate and manage hazardous waste from generation through transportation, storage, or treatment to eventual disposal.³ Subtitle D of RCRA established the basis for federal guidelines and state regulation of nonhazardous wastes.

RCRA required EPA to promulgate regulations for the Subtitles C and D programs within certain

¹ 1965 Solid Waste Disposal Act, Pub. L. No. 89-272, 79 Stat. 989 (1965).

² Resource Conservation and Recovery Act, Pub. L. No. 94-580, 90 Stat. 2795. The Solid Waste Disposal Act, as amended by RCRA, is codified at 42 U.S.C. §§ 6901-6987. The entire SWDA, as amended through 1988, is codified at 42 U.S.C. §§ 6901-6992 and is hereafter generically referred to as "RCRA." RCRA, as amended through 1988, consists of ten subtitles.

³ Subtitle C of the 1976 RCRA consisted of the following six major components: A hazardous waste tracking system using manifests similar to a "chain-of-custody" concept; safety standards, recordkeeping, labeling, training, and reporting requirements for generators, transporters, and facilities that treat, store, or dispose hazardous waste; substantive standards and a permitting system for certain facilities that treat, store, or dispose hazardous wastes; requirements for identifying and listing hazardous wastes; program for authorization of states to administer the Subtitle C program; and enforcement provisions.

time periods after RCRA enactment.⁴ Due to inadequate funding and manpower, EPA failed to meet these deadlines.⁵

The Solid Waste Disposal Act Amendments of 1980⁶ made various mechanical adjustments to RCRA but, overall, did not signify a dramatic policy change in the RCRA program. The major changes of the 1980 Amendments were: (1) Authorizing EPA to more stringently regulate new facilities than existing facilities; (2) statutorily endorsing the "interim status" concept that had been administratively developed by EPA, and extending the time period for facilities to qualify for interim status; (3) increasing criminal penalties for violations and streamlining other enforcement authorities; (4) adding other statutory authorities to assist EPA in administering the Subtitle C program, such as expanding the scope of EPA's imminent hazard abatement authority and allowing EPA to require owner/operators of disposal sites to conduct testing, analysis, and monitoring for suspected releases; and (5) temporarily exempting certain petroleum, utility, mining, and cement kiln wastes from hazardous waste regulation pending further EPA studies.

Due to Congressional disenchantment with EPA's repeated failure to meet Congressionally mandated deadlines for promulgation of RCRA regulations, Congressional distrust of top EPA officials' and the Reagan Administration's environmental conscience, and the "litany of loopholes in RCRA . . . creating a perpetual supply of new Superfund sites,"⁷ Congress passed the voluminous and detailed Hazardous

⁴ RCRA's deadline for Subtitle C regulations was eighteen months after the enactment date of October 21, 1976, or not later than April 1978. The deadline for promulgation of Subtitle D regulations was one year after the enactment date.

⁵ This resulted in a citizens suit to force EPA's compliance with the RCRA statutory deadlines. *See Illinois v. Costle*, 9 Env'tl. L. Rep. 20243 (D.D.C. 1979). The resultant court order required EPA to promulgate Subtitle C regulations in three phases, which EPA did in 1980 and 1982.

⁶ Solid Waste Disposal Act Amendments of 1980, Pub. L. No. 96-482, 94 Stat. 2334.

⁷ C. Harris, W. Want, & M. Ward, *Hazardous Waste: Confronting the Challenge*, xvi (Introduction by Congressman Dennis E. Eckhart [D.-Ohio]) (1987).

and Solid Waste Amendments (HSWA) of 1984.⁸ On November 8, 1984, President Reagan signed the Hazardous and Solid Waste Amendments (HSWA).⁹ These amendments, by far the most important to RCRA, provided detailed directives to EPA on how to exercise its authority in the hazardous waste management program. The HSWA contained minimum substantive criteria, strict deadlines, and "hammer provisions" under which Congressional regulatory commands (which were usually Draconian in nature) took effect unless, within relatively short deadlines, EPA published national standards on the applicable subject.

⁸ See Hill, *An Overview of RCRA: The "Mind-Numbing" Provisions of the Most Complicated Environmental Statute*, 21 Env'tl. L. Rep. 10254, 10256 (May 1991); see also C. Harris, W. Want, & M. Ward, *Hazardous Waste: Confronting the Challenge*, Chapter 2 (1987).

⁹ Hazardous and Solid Waste Amendments of 1984, Pub. L. No. 98-616, 98 Stat. 3221.

B. Hazardous Waste Universe

RCRA jurisdiction only applies to wastes. If the chemical is not a waste, RCRA does not apply; whereas, under CERCLA jurisdiction, a hazardous substance is not restricted to wastes. In comparison to CERCLA's "hazardous substance" universe, the RCRA hazardous waste universe is significantly narrower and, in fact, a subset of CERCLA's hazardous substances. Generally, all waste materials can be divided into hazardous and non-hazardous wastes. If determined to be hazardous, as discussed below, the waste is subject to the rigorous regulatory compliance program under RCRA Subtitle C. However, for purposes of RCRA corrective action, the hazardous and non-hazardous distinction for wastes is not as significant because corrective action can be required for releases of hazardous wastes *and/or* certain releases of hazardous "*constituents*" from non-hazardous wastes.

RCRA § 3001 required EPA to identify chemicals that qualify as "hazardous" wastes, and thus subject to the Subtitle C control and management program.¹⁰ EPA responded to this mandate by publishing 40 C.F.R. Part 261 which defines "solid waste" and "hazardous waste".¹¹

To be considered a hazardous waste, the chemical or material must first satisfy the definition of solid waste.¹² Subject to certain statutory and regulatory exclusions, a solid waste is generally defined as a solid, liquid, or contained gas, that is a discarded material (abandoned, recycled, or otherwise "inherently waste-like").¹³ Excluded from the definition of solid waste are domestic sewage, any mixture of domestic sewage and other wastes that pass through a sewer system to a publicly-owned

¹⁰ Although Congress provided a general statutory definition of "hazardous waste" at RCRA § 1004(5), codified at 42 U.S.C. § 6904(5) (1988), EPA's regulatory identification of such wastes was intended to complement the general definition.

¹¹ 40 C.F.R. §§ 261.2 (solid waste) and 261.3 (hazardous waste) (1990).

¹² 42 U.S.C. §§ 6904(27) and 6921; 40 C.F.R. Part 260, App. I (1990).

¹³ 40 C.F.R. § 261.2(a) (1990).

treatment works for treatment, industrial point source discharges, irrigation return flows, certain Atomic Energy Act materials, unremoved ground materials subject to in situ mining techniques, pulping liquors, spent sulfuric acid used to produce virgin sulfuric acid, and reclaimed secondary materials that are returned to the original production process to be reused for that purpose.¹⁴ If the waste is considered a solid waste, but not hazardous, the activity involved with the solid waste may fall under the less stringent requirements of Subtitle D of RCRA. However, as will be discussed later, a solid waste management unit that has a waste stream containing hazardous constituents, even if not a hazardous waste stream as defined in RCRA, could be subject to RCRA corrective action under RCRA § 3004(u).

Certain categories of solid waste are regulatorily excluded from the hazardous waste universe. "Special wastes", which include mining waste; fossil fuel combustion waste; oil and gas exploration/development/production waste; cement kiln dust waste; household wastes; fertilizing wastes; and mining overburden returned to the mine site are not hazardous wastes for RCRA purposes.¹⁵

Once a material has been established to be a solid waste, it can qualify as a hazardous waste in either of two ways: (1) It can exhibit any one of four characteristics known as ignitability, corrosivity, reactivity, or toxicity (determined under the toxicity characteristic leaching procedure, or TCLP, method);¹⁶ or (2) it may be specifically listed on one of four lists. For each of the four characteristics, EPA has defined a testing protocol. If a waste, when tested, exceeds a specified threshold, it is deemed

¹⁴ 42 U.S.C. § 6904(27); 40 C.F.R. § 261.4(a) (1990).

¹⁵ 40 C.F.R. § 261.4(b) (1990). However, these solid wastes, if they contain hazardous constituents, would be subject to Subtitle C's corrective action requirements if the constituents are released from a solid waste management unit. See Second Codification Rule, 52 Fed. Reg. 45788, 45789-90 (Dec. 1, 1987).

¹⁶ 40 C.F.R. §§ 261.20-.23 (1990).

to exhibit that characteristic and considered a RCRA hazardous waste.¹⁷ The four lists include generic spent materials (F-listed wastes),¹⁸ wastes or emissions from specific sources (K-listed wastes),¹⁹ and two categories of wastes from "off-specification" or "discarded" commercial chemical products where the chemical substance of concern is the sole active ingredient of the commercial product.²⁰ The wastes for these commercial chemical products are categorized either as acutely hazardous wastes (P-listed wastes) or non-acutely hazardous wastes (U-listed wastes).²¹

EPA has listed nearly 120 waste streams at 40 C.F.R. §§ 261.31 (F-list) and 261.32 (K-list). EPA has listed about 600 commercial substances as hazardous wastes when discarded (P- and U-lists), but these listings generally apply only when the products are discarded in lieu of their intended use.²²

EPA may decide to list a waste if it is known to exhibit one of the four hazard characteristics. EPA may list a waste that meets certain "toxicity" or "acute toxicity" criteria.²³ Listing for toxicity can occur if the waste contains any of the toxic constituents listed in Appendix VIII of 40 C.F.R. Part 261 unless EPA concludes the waste, even if improperly managed, is not capable of presenting a substantial

¹⁷ Ignitable wastes are solid wastes with a flashpoint of less than 140 degrees Fahrenheit (or 60 degrees Celsius) temperature. Corrosive wastes are solid wastes with a pH of 2 or less (acid) or greater than or equal to 12.5 (base or alkaline). Reactive wastes are solid wastes that are unstable, capable of detonation or are explosive. Toxic characteristic wastes are solid wastes that leach specific amounts of any of the 40 hazardous constituents used under the TCLP. Pursuant to Section 3001(g) of the 1984 HSWA Amendments, EPA replaced the Extraction Procedure toxicity test with the more aggressive TCLP method on March 29, 1990. 55 Fed. Reg. 11798 (March 29, 1990).

¹⁸ 40 C.F.R. § 261.31 (1990).

¹⁹ 40 C.F.R. § 261.32 (1990).

²⁰ 40 C.F.R. § 261.33 (1990).

²¹ *Id.*

²² 40 C.F.R. § 261.33 (1990).

²³ 40 C.F.R. § 261.11(a)(1)-(3) (1990).

risk to human health or to the environment.²⁴ Substances will be included in the Appendix VIII Hazardous Constituents listing only if they have been scientifically shown to have toxic, carcinogenic, mutagenic or teratogenic effects on humans or other life forms.²⁵ A substance will be listed for acute toxicity if it has been shown to be fatal to humans in low doses or, in the absence of data of human toxicity, it fails certain animal toxicity tests.²⁶

A mixture of an unlisted, *characteristic* hazardous waste with a nonhazardous solid waste is presumed to be a hazardous waste until the mixture no longer exhibits a hazard characteristic.²⁷ A mixture of a *listed* hazardous waste or constituent with nonhazardous solid waste is presumed to be a hazardous waste, regardless of the concentration of the listed waste or constituent, until EPA has formally "delisted" the mixture or listed waste by a notice and comment rulemaking procedure.²⁸ These two presumptions are commonly referred to as the "mixture rule."²⁹ An important exception to the mixture rule is that a mixture of a listed waste, *that was listed solely because it exhibited a hazard characteristic*, with nonhazardous waste ceases being a hazardous waste, without having to be delisted, if the mixture no longer exhibits a hazard characteristic.³⁰

Any residual solid waste *derived from* the treatment, storage, or disposal of a *characteristic* hazardous waste is presumed to be a hazardous waste until the residue no longer exhibits a hazard

²⁴ 40 C.F.R. § 261.11(a)(3) (1990).

²⁵ *Id.*

²⁶ 40 C.F.R. § 261.11(a)(2) (1990).

²⁷ 40 C.F.R. § 261.3(a)(2)(iii) (1990).

²⁸ 40 C.F.R. §§ 260.20, 260.22 (delisting rule), and 261.3(a)(iv) & (b)(2) (1990).

²⁹ See Gaba, *The Mixture and Derived-From Rules Under RCRA: Once a Hazardous Waste Always a Hazardous Waste?*, 21 Env'tl. L. Rep. 10033, 10035-36 (Jan. 1991); Hill, *supra* note 8, at 10259-60.

³⁰ 40 C.F.R. § 261.3(a)(iii) (1990).

characteristic or is delisted.³¹ Any residual solid waste derived from the treatment, storage, or disposal of a *listed* waste is presumed to be a hazardous waste until the listed waste or residue is delisted.³² These two presumptions are commonly referred to as the "derived-from rule."³³ Even though EPA's regulations allow a "mixture rule" exemption for mixtures not exhibiting a hazard characteristic despite containing listed wastes listed solely because they exhibited a hazard characteristic, the regulations do not expressly allow a similar exemption under the "derived-from rule."³⁴ Delisting is the only method available for removing hazardous waste designation for a solid waste that is deemed hazardous due to its derivation from or mixture with a *listed* waste or constituent, regardless of the concentration of the listed waste or constituent.³⁵

In comparison to *characteristic* wastes, *listed* wastes are constrained by three more stringent requirements: (1) Mixing listed waste and solid waste will result in the entire mixture becoming a hazardous waste, regardless of any simultaneous or subsequent treatment, unless a formal delisting is

³¹ 40 C.F.R. §§ 261.3(c) and (d) (1990).

³² 40 C.F.R. §§ 261.3(c)(2) and (d)(2) (1990). Certain solid wastes derived from the treatment, storage, or disposal of listed wastes are specifically deemed nonhazardous so long as the residue does not exhibit a hazard characteristic: Residue that is recycled for beneficial uses except burning for energy recovery and other uses constituting disposal; sludge resulting from lime treatment of spent pickle liquor used in the iron and steel industry; residues from burning various forms of recycled oil and petroleum products, even for energy recovery purposes; and residue from burning several forms of coke and coal tar, even for energy recovery purposes. 40 C.F.R. §§ 261.3(c)(2) and 261.6(a)(3)(v)-(ix) (1990).

³³ See Gaba, *supra* note 29, at 10038-40; Hill, *supra* note 8, at 10259-60.

³⁴ See Gaba, *supra* note 29, at 10039.

³⁵ 55 Fed. Reg. 11798, 11831 (March 29, 1990). However, EPA acknowledged the apparent unfairness of applying the mixture rule to diluted waste streams and stated it might propose a rule that would implement some type of de minimis exemption threshold for hazardous constituents found in listed wastes. *Id.* at 11832.

approved;³⁶ (2) solid waste derived from the treatment, storage, or disposal of a listed waste will be a hazardous waste until formally delisted; and (3) as a result of the mixture and "derived from" rules, RCRA's land disposal restrictions³⁷ will have a greater impact on how listed wastes and residues from listed wastes are treated and disposed.

EPA's "contained in" policy is an offshoot from the "mixture" and "derived-from" rules for listed wastes. This policy states that any *non-solid* waste that contains a listed waste will be deemed a listed hazardous waste until the taint of the listed hazardous waste component is removed from the non-solid waste.³⁸ By regulation, the "mixture" and "derived-from" rules only apply to *solid* wastes that are mixed with or derived from hazardous wastes.³⁹ The significance of the "contained in" policy is its application to non-solid wastes. Environmental media, such as soil, ground water, and surface waters, do not usually fit within the definition of "solid wastes."⁴⁰ Technically, if not for the "contained in" policy, a mixture of soil or water with a listed waste would not, by regulations attributed to the mixture rule, constitute a hazardous waste. If not a hazardous waste, contaminated soil or water could be handled without regard to RCRA Subtitle C requirements. To extend this concept one step further, if contaminated soil or water is not a hazardous waste, then treatment of contaminated soil or water would not be subject to RCRA Subtitle C restrictions. Although criticized for its legal underpinnings,⁴¹

³⁶ The exception is the exemption from the "mixture rule" for listed wastes that are listed solely because they exhibit a hazard characteristic, in which case these listed waste mixtures are treated the same as mixtures of characteristic wastes with nonhazardous wastes. *See supra* note 30 and accompanying text.

³⁷ *See infra* notes 82-89 and accompanying text.

³⁸ *See* Gaba, *supra* note 29, at 10042 (citing EPA, Superfund LDR Guide No. 5, Determining When Land Disposal Restrictions (LDRs) are Applicable to CERCLA Response Actions [July 1989]).

³⁹ 40 C.F.R. § 261.3 (1990).

⁴⁰ *See* Gaba, *supra* note 29, at 1042.

⁴¹ *Id.* at 10042.

EPA's "contained in" policy avoids the absurdities of excluding contaminated media from the hazardous waste universe.⁴²

A great deal of controversy and complexity surrounds the definition and scope of the hazardous waste universe.⁴³ EPA establishes the limits of its regulatory jurisdiction under RCRA by its definition of the terms "solid waste" and "hazardous waste". The stakes are high for those whose activities involve hazardous wastes, as reflected in subsequent discussions of the RCRA Subtitle C regulatory compliance programs and CERCLA response actions.

⁴² EPA's "contained in" policy, as it applies to contaminated soil and ground water, was upheld in *Chemical Waste Management, Inc. v. EPA*, 869 F.2d 1526, 1539-40 (D.C.Cir. 1989).

⁴³ See, e.g., *Environmental Defense Fund v. Reilly*, No. 89-0598 (D.D.C., filed March 8, 1989) (EDF suit against EPA for failure to meet RCRA waste-identification deadlines); Florini, Denison, & Rathbun, *EPA's Delisting Program for Hazardous Wastes: Current Limitations and Future Directions*, 19 Env'tl. L. Rep. 10558-10568 (Dec. 1990).

C. RCRA's Hazardous Waste Program

The primary objective of RCRA's hazardous waste program is to provide a framework under which hazardous waste is regulated from generation through transportation, storage, or treatment to ultimate disposal. Various requirements are levied against the parties regulated under the "cradle-to-grave" program. Requirements differ based on whether the party is a generator, transporter, or an owner/operator of a facility that treats, stores, or disposes hazardous waste ("treatment, storage, or disposal facility" or "TSD facility").

1. Generators

A "generator" is "[a]ny person, by site, whose act or process produces hazardous waste . . . or whose act first causes hazardous waste to become subject to [RCRA] regulation."⁴⁴ Generators are divided into three categories: Large quantity generators (LQGs), small quantity generators (SQGs), and conditionally exempt SQGs. As discussed below, LQGs and SQGs are the focus of EPA's efforts to regulate generators of hazardous waste. Pursuant to Section 3002(a) of RCRA,⁴⁵ which requires EPA to promulgate regulations applicable to generators, EPA has codified standards for LQGs and SQGs in 40 C.F.R. Part 262.

Part 262 specifies the various requirements for LQGs and SQGs. These requirements, some of which differ in stringency between the two categories of generators, include identifying whether hazardous wastes are being generated,⁴⁶ obtaining an identification number,⁴⁷ preparing manifests,⁴⁸

⁴⁴ 40 C.F.R. § 260.10 (1990).

⁴⁵ 42 U.S.C. § 6922(a) (1988).

⁴⁶ 40 C.F.R. § 262.11 (1990).

ensuring proper packaging and labelling,⁴⁹ complying with waste accumulation and containment restrictions,⁵⁰ recordkeeping,⁵¹ and reporting.⁵²

Prior to the HSWA of 1984, EPA's hazardous waste management program for generators only applied, with few exceptions, only to those generators accumulating at least 1000 kilograms or more of hazardous wastes on-site or producing that amount per month.⁵³ These generators were LQGs. LQGs can accumulate and store hazardous wastes on-site for no more than 90 days without having to comply with RCRA's storage and permitting requirements.⁵⁴ This 90-day period allows the LQGs to accumulate enough waste to make shipping and disposal of the waste more economical.

The 1984 HSWA Amendments forced EPA to regulate generators who produced more than 100 but less than 1000 kilograms of hazardous waste and no more than 1 kilogram of acutely hazardous waste in any month. These generators are SQGs. SQGs are required to comply with EPA's Part 262 requirements for managing hazardous waste, including participation in the manifest system.⁵⁵

⁴⁷ 40 C.F.R. § 262.12 (1990).

⁴⁸ 40 C.F.R. § 262.20-.23 (1990).

⁴⁹ 40 C.F.R. § 262.30-.33 (1990).

⁵⁰ 40 C.F.R. § 262.34 (1990).

⁵¹ 40 C.F.R. § 262.40 (1990).

⁵² 40 C.F.R. § 262.41-.43 (1990).

⁵³ 40 C.F.R. § 261.5(f) (1984) (superseded).

⁵⁴ 40 C.F.R. § 262.34(b) (1990).

⁵⁵ EPA estimated that inclusion of SQGs into EPA's universe of RCRA regulated entities would increase the number of federally-regulated waste generators from about 15,000 to about 200,000, while increasing the quantity of waste within EPA's regulatory jurisdiction by ½ per cent. 85 per cent of these new additions were estimated to be small businesses or establishments, such as dry cleaners, pesticide applicators, schools, and equipment repair. EPA Administrator Lee Thomas, Remarks at the Chemical Manufacturers Association's 35th Chemical Industry Conference (October 22, 1985), quoted in 16 Env. Rep. 1090 (October 25, 1985).

SQGs can store no more than 6000 kilograms of hazardous waste on their sites for up to 180 days, or for up to 270 days if the waste has to be shipped to a TSD facility located over 200 miles away.⁵⁶ Again, these limits were set so that a small business could accumulate enough waste to make shipping and disposal more economical. Exceeding these limited storage accumulation allowances or time periods would result in triggering RCRA's TSD permit requirements.⁵⁷

The third category of generators consists of those hazardous waste generators, referred to as conditionally exempt SQGs", who produce no more than 100 kilograms per month and no more than 1 kilogram of acutely hazardous waste per month. Conditionally-exempt SQGs are only required to identify all hazardous wastes they generate; dispose of these wastes in a hazardous waste facility, landfill, or other facility approved by the applicable State for industrial or municipal wastes; and never accumulate more than 1000 kilograms of hazardous waste on their facility.⁵⁸

LQGs and SQGs must complete a manifest to accompany the waste to its ultimate destination at a regulated TSD facility.⁵⁹ Each transporter, and the operator of the designated TSD facility, must sign the manifest, retain a copy, and return a copy to the generator.⁶⁰ The generator must ensure that copies of the manifest are returned to the generator or else report to EPA or an authorized state agency of any noncompliance.⁶¹

⁵⁶ 40 C.F.R. §§ 262.34(d) and (e) (1990).

⁵⁷ 40 C.F.R. § 262.34(f) (1990).

⁵⁸ See 40 C.F.R. Part 262 (1990).

⁵⁹ 40 C.F.R. §§ 262.20-.23 (1990).

⁶⁰ 40 C.F.R. §§ 263.20-.22, and 264.71 (1990).

⁶¹ 40 C.F.R. § 262.42 (1990).

2. Transporters

A "transporter" is any "person engaged in the offsite transportation of hazardous waste by air, rail, highway, or water."⁶² In addition to regulations promulgated by the Department of Transportation (DOT) governing the transportation of hazardous materials,⁶³ offsite transporters of hazardous waste must comply with EPA transporter requirements found at 40 C.F.R. Part 263.⁶⁴ The primary Subtitle C responsibilities for transporters include compliance with the manifest system and providing response actions to accidental discharges of hazardous waste during transport.⁶⁵ 40 C.F.R. Part 263 does not apply to onsite transportation of hazardous waste.⁶⁶ A transporter must comply with requirements for generators found in 40 C.F.R. Part 262 if the transporter: (1) Transports hazardous waste into the United States from a foreign country; or (2) mixes different hazardous wastes into a single shipping container.⁶⁷

3. TSD Facilities

Facilities that treat, store, or dispose of hazardous waste bear the brunt of the complicated Subtitle C regulatory requirements. In addition to several other detailed TSD facility requirements levied in

⁶² 40 C.F.R. § 260.10 (1990).

⁶³ DOT regulations on transportation of hazardous materials are found in 49 C.F.R. Subchapter C (1990).

⁶⁴ 40 C.F.R. § 263.10(a) (1990).

⁶⁵ 40 C.F.R. § 263, Subpart B (1990).

⁶⁶ 40 C.F.R. § 263.10(b) (1990).

⁶⁷ 40 C.F.R. § 263.10(c) (1990).

Section 3004 by the 1984 HSWA Amendments, Congress required EPA to promulgate regulations imposing a laundry list of requirements for TSD facilities. These include recordkeeping;⁶⁸ compliance with the manifest system;⁶⁹ monitoring and inspection;⁷⁰ facility operating standards;⁷¹ location, design, and construction standards;⁷² emergency reaction plans for unanticipated releases;⁷³ personnel training;⁷⁴ adequate financial responsibility by owners/operators;⁷⁵ and obtaining permits.⁷⁶ The 1984 HSWA Amendments added significant provisions regarding land disposal restrictions, minimum technology requirements for certain land disposal units, and corrective action requirements.

Hazardous wastes are generally handled in three ways: Land disposal, incineration, and treatment and storage in tanks and containers. Based on this distinction, the universe of TSD facilities can generally be categorized into three groups: Land disposal facilities, incinerators, and treatment/storage facilities. As of February 1991, a total of 4,615 TSD facilities subject to RCRA Subtitle C regulation existed in the United States and Its Territories.⁷⁷ 1,447 of the total were land disposal facilities; 202

⁶⁸ 42 U.S.C. § 6924(a)(1) (1988).

⁶⁹ 42 U.S.C. § 6924(a)(2) (1988).

⁷⁰ *Id.*

⁷¹ 42 U.S.C. § 6924(a)(3) and (6) (1988).

⁷² 42 U.S.C. § 6924(a)(5) (1988).

⁷³ *Id.*

⁷⁴ 42 U.S.C. § 6924(a)(6) (1988).

⁷⁵ *Id.*

⁷⁶ 42 U.S.C. § 6924(a)(7) (1988).

⁷⁷ GAO, Report on Hazardous Waste: Limited Progress in Closing and Cleaning Up Contaminated Facilities, 9 (May 1991).

were incinerators; and 2,812 were treatment/storage facilities.⁷⁸ The remaining 154 facilities could not be classified by facility type because of insufficient information in EPA's data bases.⁷⁹

The 1984 HSWA Amendments reflected a reversal in the pre-1984 Congressional philosophy of not becoming involved with details of hazardous waste management over TSD facilities. In the Amendments, Congress added land disposal restrictions (LDRs) to RCRA § 3004.⁸⁰ Congressional intended to minimize or eliminate reliance on land disposal by designating land disposal as the least favored method of managing hazardous wastes.⁸¹ Section 3004(k) defined "land disposal" for purposes of LDRs as including the "placement" of a specified hazardous waste "in a landfill, surface impoundment, waste pile, injection well, land treatment facility, salt dome formation, salt bed formation, or underground mine or cave."⁸² As an example of the Congressional use of "hammer" provisions, the LDR provision bans the land disposal of most hazardous wastes after certain deadlines unless EPA promulgates treatment standards for those wastes or unless it can be shown that the wastes will not migrate from the land disposal facility into the surrounding environment while still hazardous.⁸³ For LDR purposes, the applicable hazardous wastes were divided into five groups for establishment of separate statutory deadlines within which EPA was to promulgate treatment standards for each group.⁸⁴ EPA responded to Congress' mandate by promulgating general treatment standards for each groups requiring the best

⁷⁸ *Id.*

⁷⁹ *Id.*

⁸⁰ 42 U.S.C. § 6924 (1990).

⁸¹ H.R. Rep. No. 1133, 98th Cong., 2d Sess., 5 (1984).

⁸² 42 U.S.C. § 6924(k) (1988).

⁸³ 42 U.S.C. § 6924(d)(1), (e)(1), and (g)(5) (1988).

⁸⁴ 42 U.S.C. § 6924(d), (e), and (g) (1988).

demonstrated available technology (BDAT) prior to lawful land disposal.⁸⁵ EPA can grant variances from the BDAT standards and levels based on the availability of existing treatment capacity.⁸⁶ These variances could extend the statutory compliance deadline for up to two years.⁸⁷ As will be discussed in the later discussion on clean up standards under CERCLA, the LDR provisions of RCRA have a potentially significant impact on treatment of contaminated soil at Superfund sites.

4. Permits and Interim Status for TSD Facilities

RCRA § 3005(a) requires each owner or operator of a new or existing TSD facility to obtain a RCRA permit from EPA or an authorized state agency.⁸⁸ The duration of the permits is not to exceed ten years.⁸⁹ EPA will review the permit for any facility with land disposal units every five years after the issuance or reissuance date to determine whether permit modifications are necessary to ensure continued compliance with current EPA requirements for land disposal units.⁹⁰ EPA has the regulatory authority to modify RCRA permits when statutory changes or new regulations affect the

⁸⁵ See 51 Fed. Reg. 40572 (Nov. 7, 1986) (standards for solvents and dioxins); 52 Fed. Reg. 25760 (July 8, 1987) (standards for California list wastes); 53 Fed. Reg. 31138 (Aug. 17, 1988) (standards for first-third of listed wastes); 54 Fed. Reg. 26594 (June 23, 1989) (standards for second-third of listed wastes); and 55 Fed. Reg. 22520 (June 1, 1990) (standards for third-third of listed and characteristic wastes).

⁸⁶ 42 U.S.C. § 6924(h)(2) and (3) (1988).

⁸⁷ *Id.*

⁸⁸ If a facility operator is a different party than the owner, the operator has the responsibility to apply for the permit. The owner must co-sign the permit application. 40 C.F.R. § 270.10(b) (1990).

⁸⁹ 40 C.F.R. § 270.50 (1990).

⁹⁰ 40 C.F.R. § 270.50(d) (1990).

standards on which the permits were based.⁹¹

The permits incorporate the minimum substantive standards set out in 40 C.F.R. Part 264.⁹² These standards establish requirements generally applicable to all TSD facilities, such as inspection requirements; requirements for emergency procedures and contingency plans; manifest, recordkeeping and reporting requirements; disposal facility closure, post-closure, and monitoring standards; security and training requirements; financial assurance requirements concerning facility closure and post-closure care; and liability coverage for third-party property damage and bodily injury.⁹³

Besides the above general standards, 40 C.F.R. Part 264, Subparts I - O specify permitting standards for the design, performance, and operation of specific categories of waste management units, such as containers, tanks, incinerators, waste piles, surface impoundments, land treatment units, landfills, and other containers.⁹⁴

The owner or operator of each new or existing TSD facility that treated, disposed, or stored hazardous waste after November 19, 1980, or the date the waste was subsequently listed by EPA as hazardous waste, is required to eventually obtain a RCRA permit.⁹⁵ For a permit to be issued, the facility must comply with the operational and technical standards in 40 C.F.R. Part 264 and the permitting requirements of 40 C.F.R. Part 270. The requirements in 40 C.F.R. Part 264 include standards for "clean closure," or nearly total removal of waste and waste residues from the site, and,

⁹¹ 40 C.F.R. § 270.41(a)(3) (1990).

⁹² 40 C.F.R. § 270.1(a)(3) (1990).

⁹³ 40 C.F.R. § 264.1(b) (1990).

⁹⁴ 40 C.F.R. Part 264, Subparts I (containers), J (tank systems), K (surface impoundments), L (waste piles), M (land treatment), N (landfills), and O (incinerators) (1990).

⁹⁵ RCRA § 3005(a) required the owner/operator apply for a permit not later than six months after EPA promulgated the necessary implementation regulations, which EPA did on May 19, 1980. See 45 Fed. Reg. 33073 (May 19, 1980).

where waste remains at the facility after closure, for postclosure care. EPA's regulations on issuance, modification, suspension, or revocation of permits are specified in 40 C.F.R. Part 124.

The permit application has two parts: (1) Part A, which requires general information on the facility and its waste activities; and (2) Part B, which provides EPA with specific information about the individual site and facility operation for gauging facility compliance with technical standards.⁹⁶ EPA will closely evaluate the Part B information to decide whether to issue or deny the permit. If EPA decides to issue the permit, the Part B information will help establish site-specific permit conditions.⁹⁷

Due to the expected delay in obtaining such permits after submission of the permit application, TSD facilities are allowed to operate under "interim status" until final EPA decision on the permit application.⁹⁸ RCRA allows interim status to those facilities: (1) That were in operation or for which construction commenced on or before November 19, 1980, or the effective date of subsequent statutory or regulatory change which subjected the facility to the permit requirement; (2) which notify EPA about the location and general description of its hazardous waste activity, as required under Section 3010 of RCRA; and (3) which filed, at least, the Part A portion of the permit application.⁹⁹ Interim status means the facility can continue to operate as if it had received a permit, until EPA can make a final administrative decision on the facility permit application. An "interim status" facility must operate under self-implementing requirements found in 40 C.F.R. Part 265 which are not as rigorous as the Part 264 standards for permitted facilities. Part 264 standards for permitted facilities include facility-specific requirements developed from information submitted by the facility owner/operator in Part B of the permit application, including requirements for ground water monitoring, corrective action, and plans for facility

⁹⁶ See 40 C.F.R. §§ 270.13 and 270.14 (1990).

⁹⁷ See 40 C.F.R. § 270.14 (1990).

⁹⁸ 42 U.S.C. § 6925(e) (1988).

⁹⁹ RCRA § 3005(e); 40 C.F.R. § 270.1(h) (1990).

closure and/or postclosure care.

Because of the technical complexity, costs, and delays in obtaining a permit, "interim status" has been extremely significant for new and existing TSD facilities. However, under Sections 3005(c)(2)(C), (e)(2), and e(3),¹⁰⁰ added by the HSWA in 1984, a facility can automatically lose interim status and, therefore, be forced to cease its hazardous waste activity until issuance of a final permit, unless it submitted its complete application for a full RCRA permit and, if a land disposal facility, certified its compliance with applicable ground water monitoring¹⁰¹ and financial assurance requirements¹⁰² by certain deadlines. The 1984 HSWA provisions pertaining to loss of interim status (LOIS) affected land disposal facilities, incinerators, and other interim status facilities, most of which were pre-HSWA¹⁰³ facilities that had not yet filed Part B permit applications or certifications of compliance by statutorily mandated deadlines.¹⁰⁴

For an already existing facility to continue handling hazardous wastes under interim status, the operator must submit Part A of the application no later than whichever of the following first occurs: (1)

¹⁰⁰ 42 U.S.C. §§ 9605(c)(2)(C), (e)(2), and (e)(3) (1988).

¹⁰¹ EPA established groundwater monitoring requirements for all hazardous waste landfills and surface impoundments in May 1980 and January 1982. See 40 C.F.R. Part 265, Subpart F (1990).

¹⁰² See 40 C.F.R. Part 265, Subpart H (1990).

¹⁰³ However, newly regulated land disposal facilities under 1984 Amendments were subject to a one-year time limit under section 3005(e)(3) to file Part B applications or close. The LOIS provisions did not affect other newly regulated units at existing interim status or permitted facilities.

¹⁰⁴ Land disposal facilities had one year from the date of the HSWA Amendments (or until November 8, 1985) to file Part B of the permit application and certify compliance with groundwater monitoring and financial assurance requirements or else lose interim status; incinerators had until November 8, 1986, to file Part B or else lose interim status on November 8, 1989; and all other pre-HSWA interim status facilities had until November 8, 1988, to file Part B or lose interim status on November 8, 1992. The November 8, 1985 deadline for owners/operators of land disposal facilities to certify compliance with financial assurance requirements was extended one year due to unexpected difficulties for the industry to obtain insurance coverage. See Harris, Want, & Ward, *supra* note 7, at 205; 42 U.S.C. §§ 6925(c)(2)(C), (e)(2), (e)(3) (1988); 40 C.F.R. § 270.73 (1990).

Six months after the date of publication of the interim status regulations first applicable to the facility; or (2) thirty days after the facility first becomes subject to already published interim status regulations.¹⁰⁵ For a new facility, the owner/operator must submit both parts of the application at least 180 days prior to the expected date of initiating facility construction.¹⁰⁶ However, construction of a facility designed to incinerate polychlorinated biphenyls (PCBs) can be approved to begin prior to permit application.¹⁰⁷ Physical construction of a new facility (except for PCB incinerators) cannot begin until the owner/operator receives a final RCRA permit.¹⁰⁸

Besides the standard RCRA operating permit, RCRA provides for special forms of permits for certain categories of facilities. The most significant of these are the permits-by-rule for barges or vessels which accept hazardous waste for ocean disposal, underground injection wells for hazardous waste disposal, and POTWs which directly accept hazardous waste for treatment (beyond whatever hazardous waste may be routed to a POTW through its standard sewage lines).¹⁰⁹ A permit-by-rule is essentially a rule promulgation approving a category of facilities to handle hazardous waste without the facilities having to submit permit applications so long as the facilities fulfill the conditions listed in the rule. Each of the aforementioned permit-by-rule categories already require operating permits under other environmental regulatory programs.¹¹⁰ As one of the conditions of obtaining a permit-by-rule, owners/operators

¹⁰⁵ 40 C.F.R. § 270.10(e) (1990).

¹⁰⁶ 40 C.F.R. § 270.10(f)(2) (1990).

¹⁰⁷ 40 C.F.R. § 270.10(f)(3) (1990).

¹⁰⁸ 40 C.F.R. § 270.10(f)(1) (1990).

¹⁰⁹ 40 C.F.R. § 270.60 (1990).

¹¹⁰ Ocean disposal barges/vessels must have ocean dumping permits under the Marine Protection, Research, and Sanctuaries Act; hazardous waste injection wells must have an Underground Injection Control (UIC) permit under the Safe Drinking Water Act; and POTWs must have a National Pollutant Discharge Elimination System (NPDES) permit under the Clean Water Act. 40 C.F.R. § 270.60 (1990).

of facilities with injection wells receiving hazardous waste for disposal are subject to the corrective action requirements of RCRA § 3004(u).¹¹¹ Section 3004(u) requires clean up of releases of hazardous constituents from any solid waste management unit on the facility.¹¹² Injection wells are considered solid waste management units for purposes of RCRA corrective action.¹¹³

¹¹¹ 40 C.F.R. 270.60(b)(3)(i) (1990).

¹¹² See *infra* notes 275-79 and accompanying text.

¹¹³ See Second Codification Rule, 52 Fed. Reg. 45788, 45791 (Dec. 1, 1987).

5. Closure and Postclosure Requirements for TSD Facilities

Regardless of whether a TSD facility has received an operating permit, is in interim status, or has lost its interim status, voluntarily or mandatorily ceasing hazardous waste operations at the facility does not end the owner/operator's obligations under Subtitle C of RCRA.¹¹⁴ EPA sets out two methods for TSD facilities to close their hazardous waste units: (1) "Clean closure", or the nearly total removal or decontamination of all hazardous wastes and contamination to the extent necessary to protect human health and the environment,¹¹⁵ which is the required option for *treatment and storage* facilities;¹¹⁶ and (2) closure with postclosure care, or leaving waste in place and ensuring the waste and contamination is properly contained and monitored to prevent the postclosure escape of hazardous waste, constituents, leachate, or decomposition products into any media (air, ground, and water).¹¹⁷ The postclosure care option is only available to hazardous waste *disposal* facilities.¹¹⁸ Subpart G of 40 C.F.R. Part 265 provides the closure and postclosure requirements for all interim status TSD facilities, except those with "regulated units."¹¹⁹ A "Regulated unit" is any land disposal unit (any surface impoundment, landfill, land treatment unit, or waste pile) that received hazardous waste after July

¹¹⁴ EPA's requirement that owners/operators of TSD facilities that lose interim status, even under the LOIS provisions, must still comply with regulatory requirements for closure and postclosure care in 40 C.F.R. Part 264 is currently being challenged in *In re Consolidated Land Disposal Regulation Litigation*, No. 82-2210 (D.C.Cir. argued February 12, 1991).

¹¹⁵ See 40 C.F.R. §§ 264.111-.115 (1990) (general closure regulations).

¹¹⁶ 40 C.F.R. § 264.110 (1990).

¹¹⁷ See 40 C.F.R. §§ 264.116-.120 (1990) (general postclosure regulations).

¹¹⁸ 40 C.F.R. § 264.110(b) (1990).

¹¹⁹ 40 C.F.R. § 270.1(c) (1990).

26, 1982.¹²⁰ "Regulated units" are required to obtain postclosure permits and, thus, comply with the postclosure requirements for permitted facilities under 40 C.F.R. Part 264.¹²¹

A facility owner/operator must notify the Regional EPA administrator at least 60 days prior to the date on which the owner/operator expects to begin closing a land disposal unit or at least 45 days prior to the expected start of closing other types of TSD units.¹²² The "start date of expected closing" is either: (1) 30 days after the date on which any unit receives the known final volume of hazardous waste; or (2) if there is reasonable likelihood the unit will receive additional waste, no later than one year after the date when the unit receives its most recent volume of hazardous waste.¹²³ The owner/operator must complete final closure activities within 180 days after receiving the final volume of hazardous waste at the affected unit or facility.¹²⁴

"Closure", for an entire facility, or "partial closure", for a waste unit within a facility, signifies not only that the facility/unit has ceased accepting hazardous waste, but that the facility/unit has also been certified to have closed pursuant to the specifications in the EPA-approved closure plan. The closure certification must be completed by the owner/operator and an independent professional engineer within 60 days of closure completion.¹²⁵

A facility's closure, to be distinguished from "postclosure", plan must describe how each hazardous waste management unit on the facility will be closed; how any accumulated hazardous waste will be removed, treated, or disposed; how to "decontaminate" all hazardous waste residues from containers,

¹²⁰ 40 C.F.R. § 264.90(a)(2) (1990).

¹²¹ 40 C.F.R. § 270.1(c) (1990).

¹²² 40 C.F.R. §§ 264.112(d)(1), 265.112(d)(1) (1990).

¹²³ 40 C.F.R. §§ 264.112(d)(2), 265.112(d)(2) (1990).

¹²⁴ 40 C.F.R. §§ 264.113(b), 265.113(b) (1990).

¹²⁵ 40 C.F.R. §§ 264.115, 265.115 (1990).

equipment, and soil at the site; how ground water will be monitored, leachate will be collected, and run-on and run-off will be controlled; and a time schedule for closure activities.¹²⁶ For facilities applying for an operating permit, the closure plan must be submitted with the permit application.¹²⁷ EPA will incorporate an approved closure plan as a condition within the permit.¹²⁸ For interim status facilities that have not submitted a permit application, the closure plan must be provided to EPA upon request.¹²⁹

Unless the owner/operator can demonstrate a "clean closure", the owner/operator will be required to obtain a postclosure permit and perform postclosure care for the unit or facility. Because it is extremely difficult and costly to "clean close" landfills or other types of land disposal units,¹³⁰ land disposal units usually have no choice but to leave some contaminated residue or soils in place and close under the "postclosure care" method. If a TSD facility has regulated units and is operating under interim status or has lost interim status, the owner/operator must still obtain a postclosure permit.¹³¹

To apply for a postclosure permit, the TSD facility owner/operator submits a Part B permit application containing only information relevant to postclosure responsibilities.¹³² This information would include the types of ground water and soil under the facility and other sampling and analytical data that would enable EPA to determine site-specific postclosure care responsibilities. These responsibilities

¹²⁶ 40 C.F.R. §§ 264.112, 265.112 (1990).

¹²⁷ 40 C.F.R. § 270.14(b)(13) (1990).

¹²⁸ 40 C.F.R. § 264.112(a)(1) (1990).

¹²⁹ 40 C.F.R. § 265.112(a) (1990).

¹³⁰ See, e.g., 40 C.F.R. §§ 264.228(a)(1) (closure standard for surface impoundments) and 264.258(a) (closure standard for waste piles) (1990).

¹³¹ 40 C.F.R. § 270.1(c) (1990).

¹³² 40 C.F.R. § 270.14(a) (1990).

include the proposed plan and schedule for postclosure care, ground water monitoring requirements, demonstrating adequate financial responsibility to carry out postclosure care responsibilities, and corrective action to address contaminant releases from any solid waste management unit on the facility.

For land disposal units, postclosure care generally involves removing or solidifying any free liquids within the wastes, placing a highly impermeable cover over the unit to minimize rainwater infiltration, maintaining bottom liners to minimize uncontrolled leaching, placing a leachate collection system to control any leaching that occurs after the unit is lined and capped, installing upgradient and downgradient ground water monitoring wells for detection of possible contaminant releases into ground water, establishing a vegetative cover, and maintaining institutional controls (such as fencing, surveyed benchmarks to identify waste cell locations, other security procedures, and deed restrictions) at the facility to prevent disturbance and exposure to the waste left in place.¹³³ The postclosure care requirements for ground water monitoring and maintenance activities may last up to thirty years after closure, or even longer if circumstances warrant to preserve the integrity of the facility.¹³⁴

As of February 1991, 2,282 (or about one-half) of the 4,615 TSD facilities had decided to close or had closed their operations. Of these 2,282 closed/closing facilities, 1,128 were land disposal facilities (representing 78% of the total 1,447 land disposal facilities), 39 were incinerator facilities (representing 19% of the total 202 incinerator facilities), 1,115 were treatment/storage facilities (representing 40% of the total 2,815 treatment/storage facilities).¹³⁵

The procedures for issuance of a postclosure permit are the same as for RCRA operating facility permits; both types of permits are subject to the same substantive permitting requirements. These include

¹³³ 40 C.F.R. § 264.117(a)(1); *see, e.g.*, 40 C.F.R. §§ 264.228(a) (for surface impoundments), 264.258 (for waste piles), 264.310 (for landfills) (1990).

¹³⁴ 40 C.F.R. § 264.117(a)(1) (1990).

¹³⁵ GAO, Report on Hazardous Waste: Limited Progress in Closing and Cleaning Up Contaminated Facilities, 10 (May 1991).

any requirements imposed by EPA under its Section 3005(c) omnibus authority¹³⁶ and Section 3004(u) and (v) corrective action requirements.

Section 3004(u) provides that, after November 8, 1984, any RCRA permit issued to a TSD facility must require corrective action for all releases of hazardous wastes or constituents from any solid waste management unit (SWMU) on the facility, regardless of how long ago the SWMU last received wastes.¹³⁷ The requirements of Section 3004(u) encompass past releases and releases that occur after issuance of the permit.¹³⁸ Under this concept, the current owner/operator of a TSD facility could be required to clean up a past or future release from an old SWMU that was never active during the current owner/operator's control over the facility.¹³⁹ Congress intended Section 3004(u) would prevent future abandoned, contaminated waste sites at TSD facilities to join the increasing number of CERCLA Superfund sites.¹⁴⁰

¹³⁶ EPA's omnibus authority under section 3005(c) of RCRA, added by the 1984 HSWA Amendments, allows EPA to set permit conditions which are not explicitly covered by existing regulations, thus expanding the scope of the RCRA permit. Section 3005(c) requires each permit issued under that section "shall contain such terms and conditions as the Administrator (or the State) determines necessary to protect health and the environment." 42 U.S.C. § 6905(c) (1988). Permit conditions based on the omnibus authority usually address unique site conditions or incorporate new technologies and can result from public comment feedback.

¹³⁷ 42 U.S.C. § 6924(u) (1988).

¹³⁸ See Second Codification Rule, 52 Fed. Reg. 45788, 45789 (Dec. 1, 1987).

¹³⁹ Owners/operators of interim status facilities that closed prior to January 26, 1983 were not required to obtain RCRA permits under pre-HSWA requirements and, therefore, are not subject to corrective action requirements under Section 3004(u). However, any regulated unit on those facilities must have ceased accepting wastes prior to July 27, 1982 to escape Section 3004(u) requirements; otherwise, the regulated unit and the facility had to obtain a postclosure permit. Even if these facilities met the cutoff dates and did not have to obtain a permit, they were still subject to corrective action requirements under Section 3008(h), whose requirements for corrective action are substantively similar to corrective action under Section 3004(u). First Codification Rule, 50 Fed. Reg. 28702, 28712 (July 15, 1985).

¹⁴⁰ H.R. Rep. No. 198, 98th Cong., 1st Sess., part 1, 61 (1983).

Under authority of RCRA § 3004(v), EPA must require the owner/operator of a TSD facility, as a condition to obtaining a RCRA permit, to clear up any contamination migrating beyond the facility's property line.¹⁴¹ This corrective action requirement is contingent on the owner/operator's ability to obtain permission from the owner of the affected offsite property to perform any necessary cleanup activities on the affected land.¹⁴²

For owners/operators of *interim status* TSD facilities that intend to close but fail to seek a postclosure permit or who elect to close by removal of contaminants (clean closure without postclosure care), EPA has authority under RCRA § 3008(h) to order any necessary corrective action requirements to protect human health and the environment.¹⁴³ The substantive requirements for corrective action under RCRA §§ 3004(u),(v), or 3008(h) would be similar.¹⁴⁴

¹⁴¹ 42 U.S.C. § 6924(v) (1988).

¹⁴² *Id.*

¹⁴³ Second Codification Rule, 52 Fed. Reg. 45788, 45795-96 (Dec. 1, 1987).

¹⁴⁴ *Id.* at 45796.

D. State Role

The development of the complicated federal-state relationship in administering RCRA is a product of the 1976 RCRA, 1980 SWDA, and 1984 HSWA Amendments. Section 3006, added by the 1976 RCRA Amendments, provides that EPA can authorize qualified states to administer and enforce the RCRA Subtitle C program.¹⁴⁵ EPA is required to authorize a state program unless the program is not equivalent to federal standards, is inconsistent with the federal program or other authorized state programs, or fails to provide adequate enforcement.¹⁴⁶ The 1980 SWDA Amendments revised Section 3009 to explicitly allow state programs to be "more stringent" than federal requirements.¹⁴⁷ After EPA authorizes a state program, the state has primary enforcement authority. EPA nevertheless retains coexisting enforcement authority under RCRA § 3008 (general federal enforcement provisions, § 7003 (imminent hazard abatement authority), and § 3013 (authority to order monitoring, testing, analysis, and reporting) for HSWA-related requirements in states that have not received final authorization for the HSWA-portion of their state programs.¹⁴⁸ The 1984 HSWA Amendments dramatically altered the federal-state relationship under RCRA by revising the rules on the applicability of new federal

¹⁴⁵ 42 U.S.C. § 6926 (1988).

¹⁴⁶ *Id.*

¹⁴⁷ 42 U.S.C. § 6929 (1988). Although the 1976 Amendments implied that states could impose more stringent requirements, Section 4 of the 1980 Amendments, as codified at 42 U.S.C. § 6929, made this authority clear:

Nothing in this title shall be construed to prohibit any state or political subdivision thereof from imposing any requirements, including those for site selection, which are more stringent than those required by such regulations.

¹⁴⁸ 40 C.F.R. § 271.3(b)(2) (1990).

requirements in states with authorized programs and by subdividing the interim and final authorization process into non-HSWA and HSWA-related state programs.¹⁴⁹

EPA authorization of a state program (or portions of the program) can occur in one of two forms: (1) Interim, or temporary, authorization under Sections 3006(c) and 3006(g)(2); or (2) final authorization under Section 3006(b). EPA can grant interim authorization if the state program is determined to be "substantially equivalent" to federal requirements.¹⁵⁰ EPA will grant final authorization if the state can demonstrate that its program is equivalent to the federal program and consistent with the federal or state programs in other states and that it provides adequate state enforcement authority.¹⁵¹ Usually, a state will initially apply for interim authorization of its program. EPA developed a phased approach to the interim authorization process: (1) Phase I, encompassing portions of Subtitle C pertaining to hazardous waste designation, generator standards, transporter standards, and interim status standards for TSD facilities; and (2) Phase II, encompassing permitting procedures and standards for TSD facilities.¹⁵²

The interim authorization process not only developed a phased approach, but portions of Subtitle C were bifurcated into non-HSWA and HSWA-related programs. Under the 1976 RCRA Amendments, interim authorizations were scheduled to cease on January 31, 1985.¹⁵³ A state was required to obtain final authorization by that deadline or lose control over its state-equivalent Subtitle C program. The 1984 HSWA Amendments extended the deadline to January 31, 1986 for interim authorization of Subtitle C portions that were not related to standards and requirements *imposed by the 1984 HSWA*

¹⁴⁹ 42 U.S.C. § 6926(g) (1988).

¹⁵⁰ 42 U.S.C. § 6926(c)(1) (1988).

¹⁵¹ 42 U.S.C. § 6926(b) (1988).

¹⁵² 40 C.F.R. § 271.121(b) (1990).

¹⁵³ 42 U.S.C. § 6926(c) (1982) (superseded).

Amendments ("non-HSWA related" or "base program" authorization).¹⁵⁴ Even though Congress did not establish an expiration date for interim authorization of portions of HSWA-related state programs,¹⁵⁵ EPA imposed a deadline of January 1, 1993.¹⁵⁶ States with interim authorization for their base program had until January 31, 1986, to obtain final authorization of their base program. As a result of the 1984 Amendments, states must be concerned with obtaining authorization for two separate programs: (1) a "base program" consisting of non-HSWA provisions under Subtitle C; and (2) a program aimed at the HSWA-related provisions of Subtitle C.

The looming expiration date for interim authorization of base programs forced states to focus their efforts towards final authorization prior to attempting to tackle the HSWA authorizations.¹⁵⁷ Additionally, a comprehensive set of EPA-promulgated, HSWA-related regulations had to first be issued by EPA so that the states could model their HSWA-related program upon the federal standards. States focusing on their HSWA-related program found that they had to constantly revise or replan their program each time EPA issued revisions to its HSWA-related regulations.¹⁵⁸

Another aspect of the 1984 HSWA Amendments dramatically affected the federal-state relationship under RCRA. Prior to the 1984 Amendments, a state with interim or final authorization of its RCRA Subtitle C program administered it entirely in lieu of EPA. During the pre-HSWA period, after a state program was authorized, the state requirements were the governing standards within that state for all

¹⁵⁴ 42 U.S.C. § 6926(c)(1) (1988).

¹⁵⁵ See 50 Fed. Reg. 28702, 28733 (July 15, 1985).

¹⁵⁶ 40 C.F.R. § 271.24(c) (1990).

¹⁵⁷ As of December 1990, 46 states have received final authorization for the non-HSWA portion, or base program, of their state programs, and only seven states have obtained authorization for the Section 3004(u) corrective action program added by the 1984 Amendments. Hill, *supra* note 9, at 10271.

¹⁵⁸ Federal HSWA-related regulations that states had to adopt to obtain final authorization were referred to as "moving targets." See First Codification Rule, 50 Fed. Reg. 28702, 28732 (July 15, 1985).

RCRA Subtitle C regulated entities,¹⁵⁹ despite any changes in the federal requirements. If more stringent Subtitle C federal requirements were enacted or promulgated, a state with an authorized program was allowed certain deadlines to develop equivalent requirements.¹⁶⁰ Until the deadline passed or the state revised its program, whichever first occurred, the new federal requirements did not take effect within the authorized state.¹⁶¹ Conversely, in states without an authorized program, the new federal requirements took immediate effect (or applied upon the statutory or regulatory effective date without any moratorium). Recognizing that this disparate treatment between authorized and nonauthorized states could lead to results contrary to the purposes of RCRA Subtitle C¹⁶², Congress added Section 3006(g) in the 1984 HSWA Amendments. Section 3006(g) requires that any new, more stringent federal "requirements or prohibitions" *imposed by the HSWA*¹⁶³ which were applicable to the generation, transportation, treatment, storage, or disposal of hazardous waste took effect in authorized states at the same time they took effect in nonauthorized states.¹⁶⁴ If a self-implementing standard imposed by the HSWA is effective immediately, it is an immediately enforceable *federal* standard in both authorized

¹⁵⁹ 42 U.S.C. § 6926 (1988).

¹⁶⁰ These deadlines were usually one year for regulatory changes and two years if state legislation was necessary to conform to or surpass the new federal requirements.

¹⁶¹ See First Codification Rule, 50 Fed. Reg. 28702, 28729 (July 15, 1985).

¹⁶² For example: Under the pre-HSWA rule on applicability of new federal requirements in authorized and nonauthorized states, new federal prohibitions against disposal of noncontainerized liquid waste in landfills (which Congress eventually did impose under the 1984 HSWA Amendments) would not apply in an authorized state for at least one year, but no such moratorium in nonauthorized states would be tolerated. This could foreseeably result in "forum shopping" by industry seeking to dispose of large amounts of liquid hazardous waste. Industry would ship their liquid wastes to landfills within authorized states (while the liquid waste-landfill ban is inapplicable) if this was cheaper than using treatment to solidify or containerize the liquid waste.

¹⁶³ 40 C.F.R. § 271.1(j) (1990) identifies the HSWA-related "requirements and prohibitions" affected by the new Section 3006(g).

¹⁶⁴ 42 U.S.C. § 6926(g) (1988).

and nonauthorized states, regardless of the lack of opportunity for the authorized state to modify its program by enacting equivalent or more stringent standards. EPA is the enforcement authority for the new federal requirements and prohibitions until the state revises its program and obtains EPA approval to administer and enforce the revised program. Even if an existing state program, as of HSWA enactment, had equivalent or more stringent standards than those imposed by the HSWA, the state had to affirmatively seek EPA approval of those HSWA-related portions of its program to reinstate its authorized status.¹⁶⁵

EPA has interpreted the HSWA-imposed "same effective date of new regulations" requirement to apply to new HSWA-related regulations until a basic framework for the HSWA provisions has been established by EPA.¹⁶⁶ Once the basic framework is in place, any subsequent HSWA-related regulations will not be immediately effective in states with authorized programs.¹⁶⁷ EPA believes Congress did not intend for an authorized state program's authority to return to EPA every time EPA promulgates a subsequent, more stringent HSWA-related modification.¹⁶⁸ In the Proposed SWMU CA Rule, EPA asked for public comments as to whether the Proposed SWMU CA Rule completes the basic HSWA framework for corrective action.¹⁶⁹

The complexities of the rules pertaining to state authorization and enforcement responsibilities based

¹⁶⁵ EPA's interpretation of this requirement stemmed from HSWA statutory language in Section 3006(b) implying an affirmative duty on all states to apply for EPA approval of the HSWA-related portions of state programs, regardless of whether the existing state program already satisfied the HSWA-related changes. To help alleviate those states with existing programs that obviously satisfied the HSWA-related standards, EPA established an abbreviated application process. *See* First Codification Rule, 50 Fed. Reg. 28702, 28731 (July 15, 1985).

¹⁶⁶ Proposed SWMU CA Rule, 55 Fed. Reg. 30798 (July 27, 1990).

¹⁶⁷ *Id.*

¹⁶⁸ *Id.*

¹⁶⁹ *Id.*

on whether provisions are HSWA-related can create hardships on the regulated community. A TSD facility in a state with an authorized base program but without an authorized HSWA program could be required to obtain a state-issued permit for non-HSWA requirements and an EPA-issued permit for HSWA requirements.¹⁷⁰ Due to the radical shift in enforcement responsibilities between EPA and the state whenever new HSWA-related federal requirements are enacted or promulgated, a TSD facility accustomed to RCRA regulation by the state agency for a base program requirement may suddenly be faced with enforcement action, supervision, and regulation by the EPA Regional Office for an HSWA-related requirement until the state revises its program. Even after the state revises its program to allow state regulation and enforcement of the the HSWA-related activity, the TSD facility faces the prospect of stagnation for any of its activities requiring agency approval while the regulatory transition between EPA and the state takes place.

¹⁷⁰ Hill, *supra* note 8, at 10271.

E. Enforcement

In addition to the permits required by RCRA § 3005 and the corrective action authorities of RCRA §§ 3004(u), (v), and 3008(h), the following enforcement tools are available under RCRA: (1) Section 3008(a) administrative or civil compliance orders and penalties; (2) Section 3007 inspection authority; (3) Section 3008(d) and (e) criminal sanctions; (4) Section 7003 authority to abate any imminent and substantial endangerment to health or the environment; and (5) Section 7002 provisions for citizen suits.

Section 3008(a) authorizes EPA or an authorized state to issue administrative compliance orders or seek judicial compliance orders in federal district court for violations of RCRA Subtitle C.¹⁷¹ A Section 3008(a) administrative order can specify civil penalties of up to \$25,000 per day of violation and revoke or suspend RCRA permits.¹⁷² Section 3008(c) provides for an additional maximum civil penalty of \$25,000 per day for noncompliance with Section 3008(a) administrative orders. Prior to 1980, EPA had to issue a notice of violation (NOV) and wait 30 days prior to issuance of a Section 3008(a) compliance order. The 1980 SWDA Amendments deleted the 30-day waiting requirement and the requirement for issuance of a NOV prior to a compliance order.¹⁷³ The 1980 Amendments also authorized EPA to directly seek a judicial compliance order without having to first issue an administrative order.¹⁷⁴

Section 3007 authorizes EPA or state regulators to inspect, to include copying documents and media sampling, the premises and records of any operator who generates, stores, treats, transports, disposes,

¹⁷¹ 42 U.S.C. § 6928(a)(1) (1988).

¹⁷² 42 U.S.C. § 6928(a)(2) (1988).

¹⁷³ Pub. L. 96-482, § 13, 94 Stat.2339 (1980).

¹⁷⁴ *Id.*

or otherwise handles hazardous wastes.¹⁷⁵ Entry onto the facility for inspections is limited to "reasonable times" and must be completed with "reasonable promptness."¹⁷⁶ EPA or an authorized state agency must inspect every TSD facility at least every two years.¹⁷⁷

Section 3008(d) outlines the criminal penalties for all criminal violations under RCRA Subtitle C, except for the "knowing endangerment" violations covered under Section 3008(e). Under Section 3008(d), anyone who commits any of the following is subject to maximum imprisonment of five years and/or fine of \$50,000 per day of violation: (1) Knowingly transports or causes to be transported any hazardous waste to an unpermitted facility (e.g., ditch); or (2) knowingly treats, stores, or disposes of any hazardous waste without a permit, in knowing violation of any authorized permit, or in knowing violation of any material interim status requirement.¹⁷⁸ Anyone who commits the any of the following is subject to maximum imprisonment of two years and/or fine of \$50,000 per day of violation:

(1) Knowingly omits material information or makes a false statement or representation on any application or other official document related to Subtitle C requirements; (2) knowingly handles hazardous waste or used oil and who knowingly destroys, alters, conceals, or fails to file any record or document related to Subtitle C requirements; (3) knowingly transports or causes to be transported any hazardous waste without a manifest; or (4) exports any hazardous waste without consent of the receiving country or in violation of an international agreement between the U.S. and the receiving country.¹⁷⁹ For a repeat offender, the maximum jail term and fine is doubled.

Section 3008(e), the "knowing endangerment" provision, provides that anyone who knowingly

¹⁷⁵ 42 U.S.C. § 6927(a) (1988).

¹⁷⁶ *Id.*

¹⁷⁷ 42 U.S.C. § 6927(e) (1988).

¹⁷⁸ 42 U.S.C. § 6928(d)(1) and (2) (1988).

¹⁷⁹ 42 U.S.C. § 6928(d)(3)-(6) (1988).

transports, treats, stores, disposes of, or exports any hazardous waste or used oil which constitutes an offense under Section 3008(d), as discussed above, and who knows at the time of violation that he/she is placing another person in danger of death or serious physical injury is subject to a maximum imprisonment of fifteen years and/or fine of \$250,000 (\$1,000,000 for companies and corporations).¹⁸⁰

Section 7003 provides EPA with the authority to abate, by administrative order or judicial injunctive relief, any imminent and substantial endangerment created by the handling, transportation, storage, treatment, or disposal of any *solid* or hazardous waste.¹⁸¹ Section 7003 not only includes the authority to order restraint, but also to order monitoring or other affirmative acts necessary to stop the endangerment.¹⁸² "Endangerment" equates to risk of harm as well as actual harm. This abatement authority applies to past and present activities and can be used to supplement other remedies under RCRA or CERCLA.¹⁸³ Violation of a Section 7003 administrative order is subject to a civil penalty of \$5,000 per day of noncompliance.¹⁸⁴

Section 7002 authorizes citizen suits to enforce violations by any regulated person, including the U.S. and Its agencies, of "any permit, standard, regulation, condition, requirement, prohibition, or order" under RCRA (not just Subtitle C).¹⁸⁵ Section 7002(b) specifies that no citizen suits can commence prior to sixty days after the plaintiff citizen has provided notice of the violations to EPA, the applicable

¹⁸⁰ 42 U.S.C. § 6928(e) (1988).

¹⁸¹ 42 U.S.C. § 6973(a) (1988).

¹⁸² *Id.*

¹⁸³ *Id.*

¹⁸⁴ 42 U.S.C. § 6973(b) (1988).

¹⁸⁵ 42 U.S.C. § 6972(a)(1)(A) (1988).

state, and alleged violator.¹⁸⁶ However, this sixty-day notice requirement does not apply to alleged violations of Subtitle C.¹⁸⁷ Additionally, no citizen suit actions can commence if EPA or the state has begun and is diligently prosecuting a civil or criminal action to address the violation.¹⁸⁸

Section 7002 further provides citizens with the authority to initiate Section 7003 abatement actions against any person¹⁸⁹ and initiate civil actions to force EPA to perform nondiscretionary RCRA duties (e.g., issue statutorily mandated regulations and comply with statutory deadlines).¹⁹⁰ The plaintiff citizen must provide notice to EPA, the applicable state, and alleged violator ninety days prior to initiating a "Section 7003-type" action.¹⁹¹ For suits to enforce EPA's nondiscretionary duties, the notice requirement is sixty days.¹⁹² For "Section 7003-type" actions, the plaintiff citizen cannot sue so long as: (1) Diligent efforts by EPA or the state have begun under RCRA § 7003 or CERCLA § 106; (2) EPA has begun removal action under CERCLA § 104; (3) EPA has incurred costs to initiate a Remedial Investigation and Feasibility Study (RI/FS) under CERCLA § 104 and is proceeding with remedial action; or (4) EPA has obtained a court order, consent decree, or issued a CERCLA § 106 or RCRA § 7003 administrative order and the responsible party has begun removal action, remedial action, or an RI/FS at the site.¹⁹³ Furthermore, a "Section 7003-type" action cannot be instituted by a

¹⁸⁶ 42 U.S.C. § 6972(b)(1)(A) (1988).

¹⁸⁷ *Id.*

¹⁸⁸ 42 U.S.C. § 6972(b)(1)(B) (1988).

¹⁸⁹ 42 U.S.C. § 6972(a)(1)(B) (1988).

¹⁹⁰ 42 U.S.C. § 6972(a)(2) (1988).

¹⁹¹ 42 U.S.C. § 6972(b)(2)(A) (1988).

¹⁹² 42 U.S.C. § 6972(b)(2)(B) (1988).

¹⁹³ 42 U.S.C. § 6972(b)(2)(C) (1988).

citizen for EPA/state decisions regarding siting or permitting of a TSD facility.¹⁹⁴

Citizen suits must be brought in the U.S. district court where the alleged violation or endangerment occurred. Citizen suits to compel EPA to perform nondiscretionary duties may also be brought in the District Court of the District of Columbia.¹⁹⁵ The court may award litigation costs to the "prevailing or substantially prevailing party."¹⁹⁶

¹⁹⁴ 42 U.S.C. § 6972(b)(2)(C) (1988).

¹⁹⁵ 42 U.S.C. § 6972(a) (1988). Non-enforcement judicial review of final RCRA regulations promulgated by EPA and adverse EPA decisions on petitions for promulgation, amendment, or repeal of any RCRA regulation is conducted solely in the U.S. Court of Appeals for the District of Columbia. *See* 42 U.S.C. § 6976(a)(1) (1988). Non-enforcement judicial review of EPA's permitting decisions or decisions on granting, denying, or withdrawing interim authorization of state programs is conducted in the U.S. Circuit Court of Appeals for the district in which the plaintiff resides. *See* 42 U.S.C. 6976(b) (1988).

¹⁹⁶ 42 U.S.C. § 6972(e) (1988).

III. Corrective Action

A. Pre-HSWA RCRA Corrective Action

Prior to the 1984 HSWA Amendments, EPA relied on the following as statutory and regulatory authorities for requiring or enforcing corrective action at Subtitle C regulated facilities: (1) Section 7003 of RCRA, which allows EPA to address past or present improper handling of either solid or hazardous wastes that may present an imminent and substantial endangerment to human health or the environment; (2) Section 3013 of RCRA, which allows EPA to conduct (at owner/operator's expense) or require the owner/operator to conduct testing, monitoring, and analysis at a facility where the presence or releases of hazardous waste may present an imminent and substantial endangerment to human health or the environment; and (3) 40 C.F.R. Part 264, Subpart F, which establishes EPA's regulatory program to address releases of hazardous wastes and constituents to ground water from "regulated units" at facilities that have received permits. The latter authority served as the "heart" of EPA's pre-HSWA corrective action program.

It is important to note that 40 C.F.R. Part 264, Subpart F (hereafter "Part 264 Subpart F") only applied, and still does apply with some major modifications by the 1984 Amendments, to TSD facilities containing "regulated units", and not to all hazardous waste management facilities subject to RCRA Subtitle C regulation. Prior to the 1984 HSWA Amendments, "regulated units" were defined by EPA as surface impoundments, waste piles, land treatment units, and landfills which accepted hazardous waste after January 26, 1983.¹⁹⁷ Additionally, prior to the 1984 Amendments, only facilities with regulated units seeking a permit were covered under the Part 264 Subpart F program. Furthermore, Part 264 Subpart F addressed only releases of hazardous constituents from regulated units into ground water

¹⁹⁷ See 47 Fed. Reg. 32274, 32288-89 (July 26, 1982).

within the uppermost aquifer.

The 1984 Amendments expanded the scope of Part 264 Subpart F by redefining "regulated unit" and by requiring interim status facilities with regulated units to comply with the Part 264 Subpart F requirements. EPA's regulatory definition of "regulated unit" was statutorily redefined to encompass land disposal units that accepted hazardous waste after *July 26, 1982*, the date when EPA's Part 264 Subpart F regulations were originally promulgated.¹⁹⁸ In comparison to the post-HSWA corrective action programs under Sections 3004(u), (v), and 3008(h), which encompass releases of hazardous constituents to any media from all TSD facilities and solid waste management units, the Part 264 Subpart F program is significantly narrower in scope.

EPA promulgated the original version of Part 264 Subpart F in 1982 under authority of RCRA § 3004(a).¹⁹⁹ EPA implemented the ground water monitoring and corrective action requirements of Part 264 Subpart F through permits.²⁰⁰ Despite the separate, more comprehensive corrective action authorities under Sections 3004(u), (v), and 3008(h) added by the 1984 Amendments, Part 264 Subpart

¹⁹⁸ 42 U.S.C. § 6925(i) (1988). EPA's original Part 264 Subpart F regulations were promulgated on July 26, 1982, but EPA delayed implementation of Part 264 Subpart F ground water monitoring and corrective action requirements until January 26, 1983. This allowed facilities with regulated units a six-month period in which to decide whether to continue operations and face the new rigorous ground water monitoring and corrective action requirements. The 1984 Amendment revision reflected Congressional dissatisfaction with this six-month grace period. See H.R. Rep. No. 198, 98th Cong., 1st Sess., Part 1, 44-45 (1983).

¹⁹⁹ See 47 Fed. Reg. 32274 (July 26, 1982); 42 U.S.C. § 6924(a) (1988).

²⁰⁰ Although 40 C.F.R. Part 265, Subpart F (not to be confused with Part 264 Subpart F) contains limited groundwater monitoring requirements for interim status facilities with land disposal units, Part 265 Subpart F did not address any corrective action requirements for such interim status facilities. See 45 Fed. Reg. 33232 (May 19, 1980). EPA believed it lacked the regulatory authority to require corrective action at those facilities unless they sought a permit, elected to close, or posed an imminent and substantial endangerment to human health or the environment (i.e., addressable under RCRA § 7003). See H.R. Rep. No. 1133, 98th Cong., 2d Sess. 110-111 (1984).

F requirements still apply today to TSD facilities with regulated units.²⁰¹

Part 264 Subpart F generally requires a ground water detection monitoring program, ground water compliance monitoring program if releases of hazardous constituents are detected during the detection monitoring phase, and corrective action if compliance monitoring indicates ground water protection standards are exceeded. The EPA Regional Administrator will specify in the facility permit those hazardous constituents to be covered by the ground water protection standards and those that are to be monitored by the specific facility.²⁰² Contaminants covered by the ground water protection standards are those most commonly found to be released to ground water by regulated units.²⁰³

The ground water detection monitoring program essentially requires most land disposal units to install a sufficient number of upgradient and downgradient monitoring wells to detect a potential contaminant release from the units' waste management area into ground water within the uppermost aquifer.²⁰⁴ The purpose of the upgradient monitoring wells is to measure the "upstream" quality of ground water prior to its flow under or near the waste management area. This "upstream" quality is commonly referred to as the background concentration level or background level. The background level is significant because it serves two major functions: (1) As a measure for attribution, and (2) as a standard for clean up if corrective action is required. First, since the background level represents the preexisting concentration level of hazardous constituents, if any, that is not attributable to the hazardous waste activities at the land disposal facility, any increase in the concentration level detected at the

²⁰¹ See 40 C.F.R. §§ 264.90(a)(2) and 264.100 (1990). EPA intends to amend Part 264 Subpart F so that it conforms with the recently proposed corrective action rule for all TSD facilities with solid waste management units. See EPA's Proposed Corrective Action Rule for Solid Waste Management Units, 55 Fed. Reg. 30798, 30800 (July 27, 1990) [hereafter "Proposed SWMU CA Rule"].

²⁰² 40 C.F.R. § 264.93(a) (1988).

²⁰³ *Id.*

²⁰⁴ 40 C.F.R. § 264.96 (1990).

downgradient monitoring wells theoretically represents the amount of contamination attributable to that facility. Secondly, even if contamination is attributable to the facility and corrective action is required, the facility may only need to clean up the contamination to the background concentration level,²⁰⁵ and in extreme cases, may not even need to clean up at all if the aquifer is hydrogeologically isolated, already contaminated, and not likely to be used for human purposes in the future.

The downgradient monitoring wells measure the hazardous constituent concentration levels in the ground water after it has flowed under or near the waste management area. These wells are situated at "points of compliance" designated by the EPA Regional Administrator in the facility's permit.²⁰⁶ The point of compliance is any designated location along the vertical plane extending down from the downgradient boundary of the waste management area into the uppermost aquifer.²⁰⁷ If the facility contains more than one regulated unit, the overall waste management area is the imaginary boundary line circumscribing all of the regulated units on the facility.²⁰⁸ By statistically comparing the measurements of downgradient concentration levels with the upgradient measurements, the facility owner/operator can determine whether the ground water exhibits a "statistically significant increase" in hazardous constituent concentration levels.²⁰⁹ Evidence of a statistically significant increase represents possible contamination attributable to the regulated units on the facility. Four samples from each well must be collected at least semiannually for detection monitoring purposes.²¹⁰

Once a statistically significant change is detected, the facility must apply to EPA for a permit

²⁰⁵ 40 C.F.R. § 264.94(a)(1) (1990).

²⁰⁶ 40 C.F.R. § 264.95(a) (1990).

²⁰⁷ *Id.*

²⁰⁸ 40 C.F.R. § 264.95(b)(2) (1990).

²⁰⁹ 40 C.F.R. § 264.98(f) (1990).

²¹⁰ 40 C.F.R. §§ 264.97(g)(1) and 264.98(d) (1990).

modification to establish a compliance monitoring program.²¹¹ This program is intended to determine whether ground water protection standards are being exceeded due to contaminant releases at the facility.²¹² Ground water protection standards are EPA's maximum allowable concentration levels of constituents necessary for ground water protection.²¹³ These standards are derived from any one, or a combination, of three sources: (1) Background levels;²¹⁴ (2) maximum contaminant levels (MCLs) from the Safe Drinking Water Act (SDWA);²¹⁵ or (3) alternate concentration levels (ACLs),²¹⁶ all of which must be protective of human health and the environment based on site-specific circumstances.²¹⁷

Use of background levels, where no or very little preexisting pollution to ground water exists, can often require selection of a costly and difficult-to-implement remedy. MCLs are limited to the small number of contaminants for which EPA has promulgated enforceable standards under the SDWA. An owner/operator of a regulated unit may be motivated to demonstrate the applicability of an ACL. But, selection of an ACL as the relevant ground water protection standard can lead to public controversy over: (1) aquifer anti-degradation, (2) whether to allow an "acceptable" increase in cancer (for carcinogenic wastes and constituents), and (3) the location where the concentration level should be measured.

Additionally, the decision on whether the ACL selection process is stringently or liberally applied

²¹¹ 40 C.F.R. § 264.98(g)(4) (1990).

²¹² 40 C.F.R. § 264.99(a) (1990).

²¹³ See 40 C.F.R. § 264.94, Table 1 (1990) for a partial listing of EPA's groundwater protection standards.

²¹⁴ 40 C.F.R. § 264.94(a)(1) (1990).

²¹⁵ 40 C.F.R. § 264.94(a)(2) (1990).

²¹⁶ 40 C.F.R. § 264.94(a)(3) (1990).

²¹⁷ See 40 C.F.R. § 264.94(b) (1990).

under RCRA could have a dramatic impact on cleanups of Superfund sites. As will be discussed later, Section 122 of the 1986 Superfund Amendments to CERCLA codified EPA's policy that any substantive standard established under RCRA was deemed an "applicable and relevant or appropriate requirement" (ARAR) for the determination of the required level of cleanup at a Superfund site.²¹⁸ Congress apparently foresaw that a liberal RCRA ACL process could degrade the Superfund program; and, in CERCLA, Congress placed restrictions the use of RCRA-derived ACLs that measure the "human exposure" factor beyond the facility boundary for ACL determinations.²¹⁹ Under CERCLA, ACLs cannot be used if a point of human exposure beyond the facility boundary is assumed, unless: (1) One can determine where the affected ground water under the site emerges into surface water; (2) no increase of pollutants will occur at the location where the ground water emerges; and (3) enforceable measures are taken to prevent use of the ground water.²²⁰

Under compliance monitoring requirements, the land disposal facility must monitor the ground water at the designated points of compliance to determine whether any contaminant releases from its regulated units exceed the ground water protection standards.²²¹ As with detection monitoring requirements, the compliance monitoring program requires all wells be sampled at least semiannually with four samples per well per sampling period.²²² The samples must be thoroughly analyzed at least annually for not only constituents specified in the permit, but also for all constituents listed in the Ground water

²¹⁸ Superfund Amendments and Reauthorization Act of 1986, § 122, Pub. L. No. 99-499, 100 Stat. 1613 (1986), amending CERCLA § 121, codified at 42 U.S.C. § 9621(d)(2)(A) (1990).

²¹⁹ CERCLA § 121(d)(2)(B)(ii), codified at 42 U.S.C. § 9621(d)(2)(B)(ii) (1988).

²²⁰ *Id.*

²²¹ 40 C.F.R. § 264.99(a) (1990).

²²² 40 C.F.R. § 264.99(f) (1990).

Monitoring List found at Appendix IX of Part 264.²²³ If any new hazardous constituents, other than those specified in the permit for testing, are discovered, they must be reported to EPA who will add them to the facility's monitoring list.²²⁴ If the owner/operator determines that any concentration limits under the ground water protection standards are exceeded at the downgradient monitoring wells, he/she must notify EPA within seven days and apply, within 180 days, for a permit modification proposing a corrective action program.²²⁵ The owner/operator may alternatively demonstrate to EPA, within 90 days, that another source caused the contamination or that the detection resulted from a flawed sampling or sampling analysis.²²⁶

The provisions in Part 264 Subpart F establish the *requirement* for corrective action at regulated units, but those provisions do not provide regulatory detail, other than for ground water monitoring requirements, on *how* corrective action will be implemented. Instead, Part 264 Subpart F relies on the permit as the vehicle to specify the "nuts and bolts" of the clean up effort.²²⁷

As a result of the 1984 Amendments, Part 264 Subpart F now requires an owner/operator to clean up not only the regulated unit's waste management area, but also the areas: (1) Between the points of compliance and the downgradient facility property boundary; and (2) beyond the facility boundary (i.e., off-site) if the affected off-site property owner allows the facility owner/operator to conduct such a clean up.²²⁸

As alluded to earlier, Part 264 Subpart F, prior to the 1984 HSWA Amendments, only applied to

²²³ 40 C.F.R. § 264.99(g) (1990).

²²⁴ *Id.*

²²⁵ 40 C.F.R. § 254.99(h) (1990).

²²⁶ 40 C.F.R. § 264.99(i) (1990).

²²⁷ 40 C.F.R. § 264.100(b) (1990).

²²⁸ 40 C.F.R. § 164.100(e) (1990).

regulated units on facilities that obtained permits. For interim status facilities with land disposal units, the only ground water monitoring requirements were: (1) a detection monitoring program similar but not as stringent as required for permitted facilities with regulated units;²²⁹ and (2) after establishment of the detection monitoring program, development of a more comprehensive ground water quality assessment program.²³⁰ These interim status facilities were not required to implement a compliance monitoring program upon detection of a significant parameter change. Instead, the interim status facility had to provide EPA with a ground water quality assessment plan within fifteen days of detection²³¹ and then proceed to implement the plan. EPA did not develop regulatory deadlines for eventual implementation of the facility ground water quality assessment plan.

In contrast to Part 264 Subpart F for permitted facilities, Part 265 Subpart F (for interim status facilities) did not contain requirements for corrective action. However, due to the 1984 Amendments, interim status facilities with regulated units are now subject to the ground water monitoring and corrective action requirements of Part 264 Subpart F.

²²⁹ 40 C.F.R. § 265.91 (1990). For an interim status facility's detection monitoring program, EPA only required at least one upgradient and three downgradient monitoring wells (whereas no minimum number of wells were specified for permitted facilities). Rather than measure specific constituent concentration levels as is required under Part 264 Subpart F, the Part 265 Subpart F detection monitoring program measured "parameters", such as pH and total organic carbon, as indicators of groundwater quality and possible contamination. See 40 C.F.R. §§ 265.91(a) and 265.92(b) (1990).

²³⁰ 40 C.F.R. § 265.93 (1990).

²³¹ 40 C.F.R. § 265.93(d)(6) (1990).

B. Post-HSWA RCRA Corrective Action

The 1984 HSWA Amendments dramatically expanded EPA's authority to discover, investigate, and remedy releases of hazardous constituents to all media from any TSD facility, including treatment/storage and incinerator facilities with nonregulated units operating under interim status or a permit. As discussed in the previous section, the pre-HSWA Part 264 Subpart F corrective action program focused on releases to ground water from regulated units (which received wastes after January 26, 1983) at permitted facilities. The 1984 Amendments modified Part 264 Subpart F by redefining "regulated unit" to include land disposal units that received waste after July 26, 1982 and also made Part 264 Subpart F requirements applicable to interim status facilities with regulated units.²³² In addition to modifying the Part 264 Subpart F program, the 1984 HSWA Amendments provided EPA with authority to require corrective action under separate, general circumstances: (1) Section 3004(u), which requires each facility issued a permit after November 8, 1984 to undertake corrective action for all releases of hazardous waste or constituents from any solid waste management unit (SWMU) at the facility, regardless of when the waste was placed in the unit; (2) Section 3004(v), which requires EPA to set, when necessary, requirements similar to Section 3004(u) for corrective action beyond the facility boundary; and (3) Section 3008(h), which authorizes EPA to issue administrative orders or commence civil action to require corrective action in response to a release of a hazardous waste²³³ from all *interim status* TSD facilities.

²³² 42 U.S.C. § 6925(i) (1988); *see supra* note 198 and accompanying text.

²³³ Although RCRA § 3008(h) does not mention "hazardous constituents" whereas Section 3004(u) expressly includes constituents, EPA has stated its intent to use Section 3008(h) authority to address releases of hazardous constituents. These constituents are listed in Appendices VIII and IX of 40 C.F.R. Part 261 and Part 264 (1990). EPA's rationale is Congress intended Section 3008(h) to govern interim status facilities to the same extent Section 3004(u) extends to hazardous waste and constituents. *See* EPA, National RCRA Corrective Action Strategy (Draft)(publication of notice of availability at 51 Fed. Reg. 37,608 [1986]); *see also* First Codification Rule, 50 Fed. Reg. 28792, 28716, col. 2 (July 15, 1985).

1. Section 3004(u)

RCRA § 3004(u) provides that each permit issued after November 8, 1984, "shall require corrective action for all releases of hazardous waste or constituents from any solid waste management unit at a treatment, storage, or disposal facility seeking a permit" under Subtitle C of RCRA.²³⁴ On July 15, 1985, EPA promulgated 40 C.F.R. §§ 264.90(a)(2) and 264.101 which codified this statutory language.²³⁵

One of the primary legislative purposes in enacting Section 3004(u) was to prevent RCRA sites from becoming future Superfund sites by requiring viable facility owners/operators to take prompt remedial measures for past, present, and potential contaminant releases originating from their facility, regardless of whether the owner/operator was responsible for the release.²³⁶ Section 3004(u) allows EPA to issue a RCRA permit with a schedule of compliance for corrective action rather than delay issuance of the permit until after corrective action has been completed.²³⁷ This, in turn, allows EPA to more quickly issue permits to interim status facilities, thus subjecting them sooner to the more rigorous standards under 40 C.F.R. Part 264 for permitted facilities. It also allows EPA to accelerate processing of permit applications by new TSD facilities, thus potentially providing greater TSD capacity to industry.²³⁸

²³⁴ 42 U.S.C. § 6924(u) (1988).

²³⁵ See First Codification Rule, 50 Fed. Reg. 28702 (July 15, 1985).

²³⁶ H.R. Rep. No. 198, 98th Cong., 1st Sess., part 1, 61 (1983).

²³⁷ Proposed SWMU CA Rule, 55 Fed. Reg. 30798, 30802-30803 (July 27, 1990).

²³⁸ *Id.*

2. Section 3004(v)

RCRA § 3004(v) provides that owners/operators of permitted TSD facilities, including facilities with regulated units subject to Part 264 Subpart F, must institute corrective action for releases of contamination that have migrated beyond the facility boundary, if corrective action is necessary to protect human health and the environment.²³⁹ This off-site clean up requirement is contingent upon the adjacent property owner's consent to allow the facility owner/operator access to the property for clean up purposes. The facility owner/operator must put forth his/her "best efforts" to obtain consent.²⁴⁰ If consent is denied, EPA may still require the facility owner/operator to undertake any "possible, legal, and effective" on-site corrective measures that will help alleviate the off-site migration of contaminants.²⁴¹ Such measures may include instituting ground water gradient modifications that will alter the flow of ground water to the adjacent property and purchase of water rights from the adjacent property owner.²⁴² Because the legality of undertaking these measures will vary from state to state, EPA will make a case-by-case determination of whether to require such measures.²⁴³ Additionally, EPA interprets Section 3004(v) to require facility owners/operators to demonstrate adequate assurances of financial responsibility to carry out corrective action under Section 3004(v).²⁴⁴

²³⁹ 42 U.S.C. § 6924(v) (1988).

²⁴⁰ Second Codification Rule, 52 Fed. Reg. 45788, 45790 (Dec. 1, 1987).

²⁴¹ *Id.*

²⁴² *Id.*

²⁴³ *Id.* at 45791.

²⁴⁴ *Id.*

3. Section 3008(h)

RCRA § 3008(h) provides EPA the authority to issue administrative orders or commence civil actions requiring owners/operators of interim status facilities to conduct corrective action for contaminant releases which threaten human health or the environment.²⁴⁵ Section 3008(h) also allows EPA to order any other response measures necessary to assure such protection. This could include suspension or revocation of a facility's authority to operate under interim status and requiring owners/operators to conduct any necessary site investigations.²⁴⁶

Section 3008(h) was intended to supplement EPA's authority to impose corrective action through permits under Sections 3004(u) and (v).²⁴⁷ Section 3008(h) allows EPA to impose on interim status facilities any environmental standards promulgated under Section 3004.²⁴⁸ Since Sections 3004(u) and (v) extend to releases from all SWMUs on permitted facilities and SWMU releases that migrate beyond the facility boundary, EPA has interpreted its Section 3008(h) authority to similarly encompass such releases from interim status facilities.²⁴⁹

²⁴⁵ 42 U.S.C. § 6928(h) (1988).

²⁴⁶ See First Codification Rule, 50 Fed. Reg. 28702, 28716 (July 15, 1985).

²⁴⁷ *Id.*

²⁴⁸ *Id.*

²⁴⁹ *Id.*

IV. Proposed Corrective Action

Rule for SWMUs

The TSD industry needed more than a reiteration of the statutory language upon which to rely in fashioning and implementing its corrective action efforts under the new authorities. Regulatory guidance on how to implement the Sections 3004(u), (v), and 3008(h) corrective action programs was desperately needed. In October of 1986, as a precursor to the July 27, 1990, Proposed Corrective Action Rule for Solid Waste Management Units (SWMUs), EPA issued a draft "National RCRA Corrective Action Strategy" to announce its overall plans for implementing the RCRA corrective action provisions. After receipt and analysis of comments to the draft "Strategy" document, EPA added flesh to some portions of the "Strategy" and drafted a comprehensive, proposed corrective action rule. After the White House Office of Management and Budget (OMB) accomplished a lengthy "review" of EPA's draft proposed rule for nearly two years, EPA published its Proposed Corrective Action Rule for Solid Waste Management Units (SWMUs) on July 27, 1990.²⁵⁰

The July 27, 1990 Rule ("Proposed SWMU CA Rule") provides a comprehensive regulatory framework for EPA's corrective action program under Sections 3004(u) and (v) of RCRA. The Rule is also intended to serve as "guidance" on how to conduct corrective action under Section 3008(h).²⁵¹ The purposes of the proposed rule are to "promote national consistency in implementing" corrective action and to "establish standards to which States seeking authorization for section 3004(u) corrective action must demonstrate equivalence."²⁵² Although not explicitly recited in the "Purpose" section of the rule's preamble, the Proposed SWMU CA Rule reeks with preserving sufficient flexibility in EPA's

²⁵⁰ 21 Env't. Rep. 1523 (December 7, 1990).

²⁵¹ Proposed SWMU CA Rule, 55 Fed. Reg. 30798, 10799 (July 27, 1990).

²⁵² *Id.* at 30799-30800.

approach to remedy selection without digressing too far astray from its national consistency objective.²⁵³ This flexible approach, if actually implemented by EPA as proposed, will allow industry to initially focus their clean up efforts and costs towards their more significant problem sites, thus providing EPA an indirect but effective priority management tool.²⁵⁴

The Proposed SWMU CA Rule, which was immediately implemented as interim guidance, would establish a new Subpart S to 40 C.F.R. Part 264.²⁵⁵ Subpart S will apply to any facility seeking a permit under Section 3005(c) of RCRA.²⁵⁶ Subpart S will apply to corrective action for all releases of hazardous waste or constituents from any SWMU at a TSD facility seeking a permit. SWMUs include regulated units. However, the requirement for corrective action for contaminant releases to ground water from regulated units will continue to be governed under the Part 264 Subpart F provision at 40 C.F.R.

²⁵³ EPA alludes to the "flexible" approach in Section V.A. of the proposed rule by stating: "This regulation would ensure that variation can be accommodated by recognizing that the necessary scope of investigations and studies may be different depending upon the situation presented." 55 Fed. Reg. 30798, 30802 (July 27, 1990). The concept of "conditional remedies" is a prime example of the "flexible" approach. See *infra* notes 357-60 and accompanying text.

²⁵⁴ Some form of priority management would appear necessary, considering EPA's 1990 estimate that approximately 5,700 facilities are subject to RCRA Subtitle C regulation, with as many as 80,000 SWMUs on those facilities. See Proposed SWMU CA Rule, 55 Fed. Reg. 30798, 30802 (July 27, 1990). However, a recent report by the GAO indicated that as of February 1991, only 4,615 TSD facilities throughout the U.S. and its territories were subject to RCRA Subtitle C regulation. Of the 4,615 facilities, 1,447 (or 31%) were land disposal facilities; 2,815 (or 61%) are treatment/storage facilities; and 202 (or 4%) were incinerator facilities. The remaining 154 (or 3%) fell within "unknown" categories. See GAO, Report on Hazardous Waste, Limited Progress in Closing and Cleaning Up Contaminated Facilities (May 1991). Using EPA's approximate SWMU-to-facility ratio of 15:1, this would still result in about 69,000 SWMUs that are potentially subject to corrective action.

²⁵⁵ Proposed SWMU CA Rule, 55 Fed. Reg. 30798, 30805 (July 27, 1990).

²⁵⁶ Four types of RCRA permits are not subject to Subpart S: (1) permits for land treatment demonstrations; (2) emergency permits; (3) permits-by-rule for ocean disposal barges or vessels; and (4) research, development and demonstration permits. *Id.*

§ 264.100.²⁵⁷ As for releases from regulated units to any other media (air, soil, surface waters), Subpart S will apply.²⁵⁸

Subpart S requirements for each facility will be set out in enforceable schedules of compliance, in which EPA specifies the procedural and technical requirements that must be followed by the permittee.²⁵⁹ Permits subject to Subpart S will include postclosure permits as well as operating permits.²⁶⁰

²⁵⁷ EPA intends to modify 40 C.F.R. § 264.100 corrective action requirements so that Part 264 Subpart F ground water monitoring requirements for releases by regulated units are kept intact. Part 264 Subpart F requirements are intended to *prevent* such releases but still subject these regulated units to the same requirements applicable to SWMUs for *responding* with necessary remedial action, if unacceptable releases are detected. Proposed SWMU CA Rule, 55 Fed. Reg. 30798, 30805 (July 27, 1990).

²⁵⁸ *Id.* at 30806.

²⁵⁹ *Id.*

²⁶⁰ *Id.*

A. What Is a "Release," "SWMU," and "Facility"?

RCRA § 3004(u) provides that each permit issued after November 8, 1984, requires corrective action for all *releases* of hazardous waste or constituents from any *SWMU* at a TSD *facility* seeking a permit under Subtitle C of RCRA. In its July 15, 1985 First Codification rule, EPA provided its interpretation of the terms "release," "SWMU", and "facility."²⁶¹ EPA's Proposed SWMU CA Rule proposes to codify these interpretations, with some modifications.²⁶²

1. Release

EPA's Proposed SWMU CA Rule essentially defines "release" as it is defined in Section 101(22) of CERCLA:

[A]ny spilling, leaking, pouring, emitting, emptying, discharging, injecting, pumping, escaping, leaching, dumping or disposing of hazardous wastes (including hazardous constituents) into the environment (including the abandonment or discarding of barrels, containers, and other closed receptacles containing hazardous wastes or hazardous constituents).²⁶³

Despite this broad definition, several limiting parameters restrict the scope of "release" that triggers

²⁶¹ First Codification Rule, 50 Fed. Reg. 28702, 28712-28713 (July 15, 1985).

²⁶² See Proposed SWMU CA Rule, 55 Fed. Reg. 30798, 30800 (July 27, 1990).

²⁶³ Proposed 40 C.F.R. § 264.501, 55 Fed. Reg. 30798, 30874 (July 27, 1990).

corrective action under Subpart S. First, RCRA § 3004(u) corrective action only applies to releases from SWMUs.

Second, where the release from a SWMU is regulated under permits of other applicable laws, such as Clean Water Act permits or Clean Air Act permits, EPA will usually defer to the relevant permitting authority to address the release under the applicable statutes governing the permit. If the permitting authority is unable to resolve the permitted release under those authorities and the release threatens human health and the environment, EPA may take necessary corrective action under its RCRA corrective action authorities.²⁶⁴

Third, corrective action will only be required for releases of hazardous waste or constituents. It is important to note that the term, "hazardous waste", for purposes of the Proposed SWMU CA Rule, means the Congressional definition of "hazardous waste" at Section 1004(5) of RCRA,²⁶⁵ which appears to be broader than the phrase "hazardous wastes identified or listed (by EPA)", which is used in other sections of RCRA.²⁶⁶ In other words, a substance could be a hazardous waste,²⁶⁷ despite not being specifically listed or identified pursuant to its characteristics in 40 C.F.R. Part 261. "Hazardous constituents" include those constituents listed in 40 C.F.R. Part 261, Appendix VIII and Part 264, Appendix IX.²⁶⁸

²⁶⁴ Proposed SWMU CA Rule, 55 Fed. Reg. 30798, 30808.

²⁶⁵ 42 U.S.C. § 6903(5) (1988).

²⁶⁶ Proposed SWMU CA Rule, 55 Fed. Reg. 30798, 30809 (July 27, 1990).

²⁶⁷ By Congressional definition, a "hazardous waste" is a waste that may cause illness or that poses a substantial hazard to human health and the environment. 42 U.S.C. § 6904(5) (1988).

²⁶⁸ Proposed 40 C.F.R. § 264.501, 55 Fed. Reg. 30798, 30874 (July 27, 1990). Prior to the Proposed SWMU CA Rule, the universe of hazardous constituents subject to corrective action was interpreted to include only those listed in Appendix VIII to Part 261. Additionally, pre-1990 EPA guidance implied that, to be a hazardous constituent for corrective action purposes, the constituent listed in Appendix VIII to Part 261 had to be a constituent of a solid waste or had to be a reaction byproduct. EPA Memorandum, Interpretation of Section 3008(h) of the Solid Waste Disposal Act (December 16,

Finally, despite the "all releases" language in Section 3004(u) of RCRA which would imply triggering corrective action under the "one molecule" concept so commonly referred to in CERCLA analysis, EPA will require corrective measure studies (CMS)²⁶⁹ under the Proposed SWMU CA Rule only for releases that exceed certain "action levels."²⁷⁰ Action levels are health- and environmental-based concentration levels for hazardous constituents that EPA deems are indicators for protection of human health and the environment.²⁷¹ Action levels will be based on available promulgated regulatory standards (such as the SDWA's maximum contaminant levels) or developed from general criteria when promulgated standards are not available for the applicable constituent or waste.²⁷² It is important to note that action levels do not necessarily represent cleanup standards.²⁷³ The action levels, which will be incorporated in any RCRA permit, serve as triggering thresholds for determining when a corrective measure study is needed.²⁷⁴

1985).

²⁶⁹ CMS, analogous to a CERCLA feasibility study, is designed to identify and evaluate potential remedial alternatives for identified releases at the facility. Proposed SWMU CA Rule, 55 Fed. Reg. 30798, 30814 (July 27, 1990).

²⁷⁰ Proposed 40 C.F.R. § 264.520(a), 55 Fed. Reg. 30798, 30875 (July 27, 1990).

²⁷¹ 40 C.F.R. § 264.521 (1990).

²⁷² Proposed SWMU CA Rule, 55 Fed. Reg. 30798, 30814 (July 27, 1990).

²⁷³ Action levels may nevertheless serve as the initial concentration levels for determination of ultimate remediation goals.

²⁷⁴ However, in Section VI.E.2.h. of the Proposed SWMU CA Rule, EPA clearly explains that the applicable EPA Regional Administrator can require a CMS even where action levels have not been exceeded. EPA's cited examples of scenarios where this proposition may apply: (1) Location of sites near "sensitive environmental receptors" that may be adversely affected by contamination below action levels; (2) cumulative adverse impact of the presence of various constituents, even though no one constituent exceeds its individual action level; (3) incremental exposure to constituents resulting in a cumulative risk to surrounding population; and (4) cumulative impact of cross-media risks (e.g., release of constituents into air and ground water). Proposed SWMU CA Rule, 55 Fed. Reg. 30798, 30874 (July 27, 1990).

2. SWMU

RCRA § 3004(u) corrective action would apply only to releases from SWMUs on facilities that received their permit after November 8, 1984. EPA proposes to define SWMU as "any discernible unit at which solid wastes have been placed at any time, irrespective of whether the unit was intended for the management of solid or hazardous waste. Such units include any area at a facility at which solid wastes have been routinely and systematically released."²⁷⁵ Significantly, this broad definition includes all active and inactive units²⁷⁶ typically used to manage hazardous and solid wastes, units that normally would be exempted from RCRA permitting as a TSD entities, and even sewer lines and open or closed ditches that collect or transport solid waste.

In addition to these units, EPA also construes SWMUs as encompassing any discernible areas at a facility where "routine and systematic" releases of solid waste have occurred. A key example of this "routine and systematic" scenario is a loading/unloading area (involving some form of human systematic activity such as loading/unloading procedures) where small but steady amounts of spillage occur.²⁷⁷ However, a one-time spill would not constitute routine and systematic releases.²⁷⁸ Additionally, where leakage occurs but is not the result of a human systematic activity (e.g., leakage from a chemical

²⁷⁵ Proposed 40 C.F.R. § 264.501, 55 Fed. Reg. 30798, 30874 (July 27, 1990).

²⁷⁶ Once a "facility" (*see infra* notes 284-89 and accompanying text) falls within RCRA jurisdiction for corrective action, any release of hazardous wastes or constituents from any SWMU (except releases to ground water from regulated units which will be addressed by Part 264 Subpart S) on the facility, *regardless of when the SWMU last received solid waste*, also becomes subject to corrective action under Subpart S. Even a SWMU that last received solid waste prior to enactment of HSWA could be subject to corrective action under this "bootstrap" method.

²⁷⁷ Proposed SWMU CA Rule, 55 Fed. Reg. 30798, 30808 (July 27, 1990).

²⁷⁸ *Id.*

product storage tank), EPA will construe this leakage as "passive" and, thus, not routine and systematic.²⁷⁹

If a broad area of contamination on a facility transcends any discernible SWMU boundaries, the facility owner/operator can request that EPA designate the entire contamination area as a corrective action management unit (CAMU). CAMU is defined as "a contiguous area within a facility as designated by the Regional Administrator for the purpose of implementing corrective action requirements of (Subpart S), which is broadly contaminated by hazardous wastes (and constituents), and which may contain discrete, engineered land based sub-units."²⁸⁰ The significance of a CAMU designation as a waste management unit lies in the remediator's ability to move or consolidate hazardous wastes within the CAMU during corrective action without triggering the need for compliance with RCRA's land disposal restrictions or minimum technology requirements.²⁸¹

The land disposal restrictions (LDRs) require that if a "banned" waste is removed and *placed* (to be distinguished from "disposed") in a regulated land waste management unit, such waste must be treated to BDAT levels prior to such placement. Under the CAMU concept, if the banned waste is merely moved or graded within the designated area of contamination, "placement" has not actually occurred. Without any "placement", the LDRs do not apply.²⁸²

Minimum technology standards, under Section 3004(o) of RCRA, apply to the construction of any new land disposal unit or replacement, expansion, or lateral extension of existing land disposal units that are intended to receive hazardous wastes. These minimum technology standards require double liners, double leachate collection systems, and leachate return systems as part of the land disposal unit design.

²⁷⁹ *Id.* at 30809.

²⁸⁰ Proposed 40 C.F.R. § 264.501, 55 Fed. Reg. 30798, 30874 (July 27, 1990).

²⁸¹ Proposed SWMU CA Rule, 55 Fed. Reg. 30798, 30843 (July 27, 1990).

²⁸² *See* 42 U.S.C. §§ 6924(d) and (k) (1988).

According to EPA, movement of hazardous wastes within the CAMU would not constitute construction of a new or replacement unit or expansion of an existing unit.²⁸³

²⁸³ Proposed SWMU CA Rule, 55 Fed. Reg. 30798, 30844 (July 27, 1990).

3. Facility

Corrective action only applies to releases from SWMUs located at a TSD *facility*. "Facility", for purposes of Section 3004(u) corrective action, is interpreted and defined more broadly than as defined at 40 C.F.R. § 260.10.²⁸⁴ In its Proposed SWMU CA Rule, "facility" is defined as "all contiguous property under the control of the owner or operator seeking a permit under subtitle C of RCRA."²⁸⁵ In interpreting what is contiguous property, EPA proposes to consider "property that is separated only by a public right-of-way (such as a roadway or a power transmission right-of-way)" as contiguous property.²⁸⁶ Additionally, if the owner of a single property leases a portion of the property to a separate entity who engages in hazardous waste management activity on the leased area, the entire commonly-owned property would nevertheless be construed as the "facility."²⁸⁷ Another scenario provided by EPA involves two adjacent properties, each operated by a different subsidiary of the same parent corporation. On one of the properties, the subsidiary conducts hazardous waste management activities, while the other subsidiary does not on its piece of property. In that situation, EPA will construe the parent corporation as the single owner of both properties, and both will be treated as a single

²⁸⁴ 40 C.F.R. 260.10 defines "facility" as "all contiguous land, and structures, other appurtenances, and improvements on the land, *used for treating, storing or disposing of hazardous waste*" (Emphasis added). This would appear to encompass only those areas of property used for hazard waste management. EPA intends to retain this definition for purposes of implementing RCRA Subtitle C requirements. 55 Fed. Reg. 30798, 30874 (July 27, 1990).

²⁸⁵ *Id.* Note the absence of the limitation, "used for treating, storing, or disposing of hazardous waste." This definition of "facility" encompasses the entire contiguous property, regardless of whether only a portion of the property was actually used for hazardous waste management activities. EPA's interpretation of "facility" in such broad terms first surfaced in its July 15, 1985 First Codification Rule and was upheld in *United Technologies Corp. v. EPA*, 821 F.2d. 714 (D.C. Cir. 1987).

²⁸⁶ Proposed SWMU CA Rule, 55 Fed. Reg. 30798, 30808 (July 27, 1990).

²⁸⁷ *Id.*

facility.²⁸⁸ In all of these scenarios, EPA could require corrective action for releases from SWMUs located anywhere on the contiguous property.

Property owned by an operator or owner that is separated from a facility by another party's property would not be construed as contiguous, and thus, not part of the facility.²⁸⁹ This entire issue of what is contiguous raises interesting strategical considerations for owners/operators of a sprawling tract of property with hazardous waste activity occurring somewhere on the property. Undoubtedly, EPA will face novel situations involving unique real estate transactions designed by facility owners to limit their corrective action responsibilities.

²⁸⁸ *Id.*

²⁸⁹ *Id.*

B. RCRA Corrective Action Process

The Proposed SWMU CA Rule describes a five-step process of determining whether corrective action is needed and, if needed, how to select and implement the remedy. The five steps are: (1) RCRA facility assessment (RFA), to identify SWMUs and any releases from SWMUs; (2) RCRA facility investigation (RFI), to determine the nature and extent of contamination, if a release has been found; (3) corrective measures study (CMS), to identify and evaluate remedial alternatives; (4) selection of remedy, to select the appropriate remedial alternative after consideration of applicable standards; and (5) remedy design, implementation, and completion pursuant to a schedule added to the permit.

1. RCRA Facility Assessment

As the first step in the corrective action process, the RFA involves EPA (or authorized state agency) review of site information from submitted documents and permit applications and a site investigation with possible sampling.²⁹⁰ The RFA is designed to identify SWMUs on the facility and determine whether any of the SWMUs have any likelihood of past, present, or future releases of hazardous constituents. The RFA helps define the scope of any subsequent RFI, and in that manner, helps define the scope of any necessary corrective action. This step is analogous to the Preliminary Assessment/Site Inspection (PA/SI) stage in the National Contingency Plan's response process.²⁹¹

²⁹⁰ Proposed SWMU CA Rule, 55 Fed. Reg. 30798, 30810 (July 27, 1990).

²⁹¹ See 40 C.F.R. § 300.420 (1990).

2. RCRA Facility Investigation

If the RFA indicates it is likely that release has occurred or will occur, EPA will require an RFI to determine the extent of the contamination and evaluating whether corrective action is necessary. EPA will specify the investigative requirements in a schedule of compliance in the facility's permit. The schedule will identify the applicable SWMUs, the suspected contaminants, and potential exposure pathways which require further investigation. EPA will specify action levels, if ascertainable, for the specific environmental media and constituents involved. The owner/operator will also be responsible for developing and implementing an investigation plan.²⁹²

The RFI is analogous to the Remedial Investigation in CERCLA. As stated by EPA, the "scope and complexity" of an RFI will depend on numerous site-specific factors. If releases or suspected releases identified in an RFA are subsequently found to be nonexistent after an RFI, no further action will be required of the owner/operator. If, however, EPA determines that the information gathered during the RFI indicates a likely need for cleanup, the owner/operator will be required to perform a CMS to identify and evaluate cleanup alternatives.²⁹³

²⁹² Proposed SWMU CA Rule, 55 Fed. Reg. 30798, 30810 (July 27, 1990).

²⁹³ *Id.* at 30814.

3. Corrective Measures Study

EPA generally will require a CMS if the contamination exceeds action levels specified in the permit for hazardous constituent concentrations in different media. However, EPA can require a CMS if action levels are not exceeded. EPA has the discretion to waive the CMS requirement even if an action level has been triggered if the owner/operator can establish that a CMS is not necessary due to mitigating site circumstances.²⁹⁴ This discretion allows EPA the flexibility to ensure adequate health and environmental protection while also allowing avoidance of unnecessary corrective action costs if the actual risk to human health and the environment do not warrant such costs.

It is important to note that a CMS requirement can be levied prior to completion of the RFI. If evidence obtained during an ongoing RFI shows that action levels will be exceeded, EPA will not hesitate notifying the owner/operator that a CMS is required. EPA intends to use the action level triggers to initiate the CMS phase as soon as possible rather than waiting for the final RFI report.²⁹⁵ This approach allows a quicker response than a more ritualistic approach would allow.

Recognizing that most RCRA facilities do not have as complex or extensive environmental problems as Superfund sites, and that many RCRA sites do not require extensive evaluation of protective remedies as do most Superfund sites, EPA will not require the scope of remedy evaluation for a CMS as normally needed for Superfund sites.²⁹⁶ Based on general categorizations of the relative magnitude of problems found at RCRA sites, EPA can limit the number of environmentally protective remedies the owner/operator must address in the CMS. For example, at a "low risk" facility, where releases pose

²⁹⁴ EPA may require a CMS even though action levels are not triggered. EPA cites several scenarios where an CMS may not be needed even though an action level is triggered (e.g., release is confined to a Class III aquifer). *See supra* note 274 and accompanying text.

²⁹⁵ *Id.*

²⁹⁶ *Id.* at 30821.

minimal risk exposure and the level of contamination is small, EPA may limit the CMS to a single treatment analysis.²⁹⁷ EPA will try to tailor the scope of CMS evaluation in proportion to the complexity of the sites. This flexibility will allow quicker remedial action and lower remedial action costs.²⁹⁸

To assist the owner/operator in performing the CMS, the EPA Regional Administrator is authorized to specify preliminary "target" cleanup levels prior to or during the CMS phase.²⁹⁹ These "target" cleanup levels would be media- and contaminant-specific. They allow the owner/operator to consider estimated cleanup levels in his/her efforts to narrow the selection of cleanup technologies for consideration in the CMS. Except citing as an example that cleanup ranges, such as 1×10^{-4} to 1×10^{-6} , might be appropriate to establish target cleanup levels, EPA did not specify what guidelines would be used to develop these target levels. Because target estimates are often based on incomplete information, EPA warns that it reserves the right to ultimately set cleanup standards that differ from the target estimates.³⁰⁰

²⁹⁷ *Id.*

²⁹⁸ *Id.*

²⁹⁹ *Id.* at 30822. The applicable EPA Regional Administrator has the discretion to impose various other requirements on the scope of the CMS, such as an evaluation of the timing of the potential remedy, inclusion of cost estimates for considered alternatives, and evaluation of institutional requirements (e.g., state or local permit requirements).

³⁰⁰ *Id.*

4. Selection of Remedy

Using five decisional criteria, EPA will evaluate and select the most appropriate remedy that satisfies four general standards. EPA will publish its selection decision in a proposed permit modification document, referred to as a "statement of basis", which is the approximate equivalent to a Superfund Record of Decision (ROD).³⁰¹ The statement of basis describes EPA's rationale for selecting the remedy and how the media cleanup standards were selected.³⁰² Additionally, EPA will publish a draft permit modification for public comment.³⁰³ After opportunity for public comment, the Agency will modify the permit to incorporate a description of the remedy's technical features; the applicable media cleanup standards (MCSs); standards for demonstration of compliance with MCSs; standards applicable to the management of corrective action wastes; requirements for removal, decontamination, closure, or post-closure of units used during remedy implementation; a schedule of compliance; and reporting requirements.³⁰⁴ Within 120 days after permit modification, the permittee must demonstrate his/her financial assurance to comply with the provisions of the permit.³⁰⁵

Any selected remedy must meet the following four standards: (1) Be protective of human health and the environment; (2) attain MCSs; (3) control the sources of releases to reduce or eliminate further releases, as much as practicable; and (4) comply with applicable waste management requirements.³⁰⁶

³⁰¹ *Id.* at 30835.

³⁰² *Id.*

³⁰³ *Id.*

³⁰⁴ *Id.*; see proposed 40 C.F.R. § 264.526(b)(1)-(7), 55 Fed. Reg. 30798, 30879 (July 27, 1990).

³⁰⁵ Proposed 40 C.F.R. § 264.526(c), 55 Fed. Reg. 30798, 30879 (July 27, 1990).

³⁰⁶ Proposed 40 C.F.R. § 264.525, 55 Fed. Reg. 30798, 30877 (July 27, 1990).

**a. First Standard: Protective of Human Health
and Environment**

The first standard reflects the overall purpose of RCRA. The standard requires remedies to include necessary protective measures that are not directly related to the other standards, such as providing alternate drinking water supplies to minimize exposure to a contaminated aquifer normally used for drinking water.³⁰⁷ Another example cited in the Proposed SWMU CA Rule is use of institutional controls, such as fences or barriers to prevent or minimize direct exposure to contaminated sites.³⁰⁸

**b. Second Standard: Attainment of MCSs,
RCRA's "How Clean Is Clean?"**

The second standard requires attainment of MCSs, which are the acceptable constituent concentrations in each media necessary to ensure protection of human health and the environment. MCSs, which often are the "target cleanup levels" used for CMS guidance, normally start at the action levels that trigger the need for a CMS. But, as discussed earlier, these preliminary levels can be modified after consideration of information gathered during the RFI or CMS.³⁰⁹

When no existing media-specific cleanup standards are available for carcinogens, EPA states that an excess lifetime risk from exposure no greater than 1×10^{-6} is appropriate as the "point of departure" for establishing remediation goals.³¹⁰ EPA believes this level is on the "more protective end of the (risk)

³⁰⁷ Proposed SWMU CA Rule, 55 Fed. Reg. 30798, 30823 (July 27, 1990).

³⁰⁸ *Id.* at 30823-30824.

³⁰⁹ *Id.* at 30822.

³¹⁰ *Id.*

range."³¹¹ However, due to practical considerations of site-specific or remedy-specific limitations, EPA may allow upward adjustment of acceptable risk to 1×10^{-4} .³¹² A risk level of 1×10^{-6} is not presumed to be the controlling standard -- EPA expects the entire risk range of 10^{-4} to 10^{-6} to be available for use at various sites.³¹³ Using 1×10^{-6} as the point of departure reflects EPA's preference for cleanup goals at the more conservative end of the range.

EPA discussed four factors it will consider in establishing MCSs: (1) The cumulative risk of multiple contaminants in the medium; (2) actual or potential threats of exposure to sensitive environmental receptors (such as sensitive ecosystems or endangered species); (3) presence of other exposures or potential exposures at the affected site which could result in either lower or higher cleanup levels; and (4) the reliability, effectiveness, practicability, and other remedy-specific factors of a remedy.³¹⁴

EPA further identified three general situations where the Regional Administrator may decide not to require cleanup to an MCS: (1) Areas of broad contamination by off-site sources; (2) if the affected medium is ground water and it is not a current or potential source of drinking water nor hydrogeologically connected to such sources of drinking water; or (3) if remediation is technically impracticable.³¹⁵

If a owner/operator has an identified SWMU located in an "area of broad contamination" caused by off-site (off-facility) sources, EPA's RCRA § 3004(u) authority over the SWMU is limited to only

³¹¹ *Id.*

³¹² *Id.* EPA has even stated that exceptional circumstances, such as cumulative impact of multiple contaminants, may require a downward adjustment (or more protective risk level) of the 1×10^{-6} goal.

³¹³ *Id.*

³¹⁴ *Id.*

³¹⁵ *Id.* at 30828-30830.

requiring cleanup of contaminants released from that SWMU.³¹⁶ If the owner/operator can prove that a concentration of constituents near the SWMU was caused by off-site sources and not by a release from his/her SWMU, EPA cannot order the owner/operator to cleanup the concentration.³¹⁷ For example, in a contaminated ground water scenario, the facility owner/operator can provide proof of this nonattribution by demonstrating the constituent levels do not exceed background levels. He/she would also have to show that no SWMUs on his/her facility contributed to the upgradient background levels.³¹⁸ Additionally, even if the downgradient concentration is higher than the upgradient concentration, the owner/operator would only have to remediate to the upgradient background levels.³¹⁹

In situations where hazardous constituents are released from a SWMU to certain ground waters, the normally applicable MCS³²⁰ can be waived or modified by the Regional Administrator. The two conditions are: (1) The ground water is not a current or potential source of drinking water, and (2) the ground water does not allow migration of the contamination to other potentially usable aquifers or surface

³¹⁶ *Id.*

³¹⁷ See proposed 40 C.F.R. § 264.525(d)(1)(v), 55 Fed. Reg. 30798, 30878 (July 27, 1990). Even if the SWMU did contribute a relatively trivial amount of release of hazardous constituents to a broad area of heavy contamination, the owner/operator can demonstrate that remediation of his/her SWMU release to the normally applicable cleanup level would result in no significant reduction in risk. However, if the EPA Regional Administrator decides to require an area-wide cleanup effort, the owner/operator would be required to accomplish the necessary corrective action. *Id.* The owner/operator would also be subject to any source control requirements to prevent future releases or limit exposure to the affected medium. See proposed 40 C.F.R. § 264.525(d)(3), 55 Fed. Reg. 30798, 30878 (July 27, 1990).

³¹⁸ *Id.*; see proposed 40 C.F.R. § 264.525(d)(2)(i), 55 Fed. Reg. 30798, 30878 (July 27, 1990).

³¹⁹ *Id.*

³²⁰ EPA stated that the normal cleanup goal would be the applicable SDWA's maximum contaminant levels (MCLs), if EPA has established MCLs for the contaminant of concern. Proposed SWMU CA Rule, 55 Fed. Reg. 30798, 30804 (July 27, 1990).

waters which would result in concentrations exceeding the MCSs.³²¹ Typical examples of what constitutes a non-drinking water supply include Class III aquifers and aquifers located in a heavily industrialized area where the ground water has been substantially contaminated from non-SWMU sources. Even if the ground water is not a potential drinking water supply but provides other beneficial uses, EPA can modify the normal MCS to a level that would adequately protect the beneficial uses. If the ground water is a potential supply of drinking water, but because of its isolated location, such as in a remote rural area, it is not likely to become such a supply in the foreseeable future, EPA can flexibly require remediation over an extended period of time while also factoring in the remedial effects of natural attenuation over this period of time.³²²

Where remediation to the normally applicable MCS is not technically practicable due to lack of engineering feasibility or reliability, the EPA Regional Administrator can waive the MCS requirement.³²³ Relevant factors in such a determination include the nature of the waste, hydrogeologic setting, risks to workers or surrounding population, and cross-media impacts. The owner/operator has the burden of proving, by clear and convincing evidence, the technical impracticability of attaining the normal MCS.³²⁴

EPA describes where and under what conditions the owner/operator must demonstrate compliance with the MCSs.³²⁵ Generally, for ground water remediation, the entire area of contaminated ground

³²¹ See proposed 40 C.F.R. § 264.525(d)(2)(ii), 55 Fed. Reg. 30798, 30878 (July 27, 1990).

³²² Proposed SWMU CA Rule, 55 Fed. Reg. 30798, 30829 (July 27, 1990).

³²³ *Id.* at 30830; see proposed 40 C.F.R. § 264.525(d)(2)(iii), 55 Fed. Reg. 30798, 30878 (July 27, 1990).

³²⁴ *Id.*

³²⁵ See proposed 40 C.F.R. § 264.525(e), 55 Fed. Reg. 30798, 30878-30879 (July 27, 1990).

water must be remediated.³²⁶ However, the Regional Administrator retains the discretion to set alternative points of compliance around common sources of release, remote sites, or sources of release where traditional methods of monitoring are impracticable.³²⁷ If waste remains in the ground water, EPA may allow demonstration of compliance at the waste unit boundary.

Demonstration of compliance with the MCS for air quality would be at the location of the most exposed individual, usually outside the facility boundary, where the individual is present for a significant period of time on a daily rather than a transient basis.³²⁸ EPA will not consider on-site facility workers as the "most-exposed individual" but will consider any persons who live on-site (e.g., community residing on military installation). If the actual location of an exposed population is immediately adjacent to a facility boundary, the point of compliance will be the facility boundary near the population.³²⁹

For releases to surface waters, the point of compliance will be the point where the releases enter the surface water. EPA will strive to designate sampling locations that minimize dilution of samplings (such as portions of the water body that are subject to fast currents).³³⁰

For soil contamination, compliance with MCSs must be demonstrated at any point where direct contact with soil may occur.³³¹ In most cases, this will be near the surface.

The issue of how long the permittee must demonstrate compliance is significant. Under the Part 264 Subpart F requirements, EPA imposed a three-consecutive-year period during which the ground water

³²⁶ Proposed SWMU CA Rule, 55 Fed. Reg. 30798, 30830 (July 27, 1990).

³²⁷ *Id.* at 30830; *see* proposed 40 C.F.R. § 264.525(e)(1)(i), 55 Fed. Reg. 30798, 30878 (July 27, 1990).

³²⁸ *Id.* at 30831; *see* proposed 40 C.F.R. § 264.525(e)(1)(ii), 55 Fed. Reg. 30798, 30878 (July 27, 1990).

³²⁹ *Id.* at 30831.

³³⁰ *Id.* at 30832.

³³¹ *Id.*

protection standard could not be exceeded prior to termination of corrective action measures.³³² In the Proposed SWMU CA Rule, EPA stated that imposing a general, fixed period of time for demonstration of compliance disregards the various site-specific, constituent-specific, and geological-specific characteristics that may be involved. Instead, the EPA Regional Administrator will have the discretion, after considering five listed factors,³³³ to set an appropriate time period for each facility.³³⁴

c. Third Standard: Source Control

Corrective action remedies must include measures to prevent further contamination by controlling the source of release. Failure to implement source control measures will be counterproductive to remediation efforts, since the release theoretically would continue to contaminate what is being cleaned up. EPA believes that remedies which include source control measures are critical to "long-term effectiveness and protectiveness" of remedial actions at RCRA facilities.³³⁵ EPA states that its "source control" standard for remedy selection under the corrective action program should not be more stringent than the NCP threshold criteria for selecting Superfund remedies.³³⁶

³³² 40 C.F.R. § 264.100(f) (1990).

³³³ The five factors are: (1) Extent and concentration of the release; (2) the behavior characteristics of the hazardous constituents in the affected media; (3) accuracy of monitoring techniques; (4) characteristics of the affected media; and (5) any seasonal, meteorological, or other environmental variables that could affect the accuracy of the monitoring methods. See proposed 40 C.F.R. § 264.525(e)(3)(i)-(v), 55 Fed. Reg. 30798, 30832-30833 (July 27, 1990).

³³⁴ Proposed SWMU CA Rule, 55 Fed. Reg. 30798, 30833 (July 27, 1990).

³³⁵ *Id.* at 30824; see proposed 40 C.F.R. § 264.525(a)(3), 55 Fed. Reg. 30798, 30877 (July 27, 1990).

³³⁶ *Id.*

**d. Fourth Standard: Compliance with
Solid Waste Management Standards**

Proposed 40 C.F.R. § 264.525(a)(4) requires that remedial activities which involve management of solid wastes must comply with applicable solid waste management requirements. For treatment, storage, and disposal of hazardous wastes during remedial activities, the owner/operator must comply with the applicable standards of 40 C.F.R. Parts 262 (generator standards), 264 (TSD facility standards), 268 (land disposal restrictions), and 269 (air emission standards for TSD facilities), except to the extent the proposed "temporary unit" provisions apply.³³⁷ Land disposal restrictions will apply to placement of restricted hazardous wastes into land disposal units, and minimum technology requirements will apply to new or replacement land disposal units or lateral expansion of existing units, except for CAMUs or, possibly, temporary units.³³⁸ RCRA's Subtitle D standards will apply to handling non-hazardous wastes.

Under proposed 40 C.F.R. § 264.550, the Regional Administrator may also impose, as a general performance standard, any other requirement deemed necessary to prevent unacceptable threats to human health and the environment by the management of corrective action wastes. Proposed 40 C.F.R. § 264.550(a) requires management of remedial wastes in compliance with state and local law. While CERCLA³³⁹ provides for statutory exemptions from state and local administrative requirements, RCRA has no similar provision. However, if a state or local law frustrates the purpose of Section

³³⁷ See *infra* notes 344-47 and accompanying text.

³³⁸ See *supra* notes 280-83 and accompanying text on how the CAMU concept alleviates the LDR and minimum technology requirements.

³³⁹ See 42 U.S.C. §§ 9621(d)(2)(C)(ii) and (e)(1) (1988).

3004(u) of RCRA or conflicts with EPA's Section 3004(u) regulations, it is subject to preemption.³⁴⁰ It also appears the Regional Administrator will have the authority to waive any state or local requirements, with the state's concurrence, if the requirements could jeopardize the implementation of a corrective action remedy.³⁴¹

The Proposed SWMU CA Rule provides several significant provisions that shield corrective action remedial activities from many of the burdensome hazardous waste management requirements. These include the discretionary authority of the Regional Administrator to waive 40 C.F.R. Part 264, Subpart G procedural requirements relating to closure of hazardous waste management units; the CAMU concept, and the concept of "temporary units."

Under proposed 40 C.F.R. § 264.551(a), the Regional Administrator has the *discretion* to waive most procedural Subpart G closure and postclosure requirements for units created by the owner/operator for the purpose of managing corrective action wastes.³⁴² These waivable requirements include submission and approval of closure plans and review of other activities pertaining to closure. EPA believes the remedy selection process and permit modifications which specify the selected remedies will suffice to ensure compliance with closure and postclosure technical requirements. EPA reasoned that imposing Subpart G procedural requirements on remedial units would result in redundant and possibly inconsistent methods for establishing the necessary technical requirements.³⁴³

Proposed 40 C.F.R. § 264.551(b)(1) allows EPA to modify certain regulatory design and operating technical standards for temporary units used for not more than 180 days for management of hazardous

³⁴⁰ EPA cites as an example authority for this proposition the following case: *ENSCO, Inc. v. Dumas*, 807 F.2d 745 (8th Cir. 1986) (RCRA preempted county ordinance which prohibited TSD of acute hazardous waste). See Proposed SWMU CA Rule, 55 Fed. Reg. 30798, 30840 (July 27, 1990).

³⁴¹ Proposed SWMU CA Rule, 55 Fed. Reg. 30798, 30840 (July 27, 1990).

³⁴² Proposed SWMU CA Rule, 55 Fed. Reg. 30798, 30841 (July 27, 1990).

³⁴³ *Id.*

waste during corrective action remediation.³⁴⁴ The 180-day limit can be extended for "unforeseen, temporary, and uncontrolled circumstances."³⁴⁵ As Superfund remedial efforts have shown, it is often necessary to build "temporary units" to manage wastes for short periods of time during remedial action activities. Such hazardous waste management facilities would normally be subject to 40 C.F.R. Part 264 standards for TSD facilities. EPA believes full compliance with Part 264 standards for these temporary units would contribute to delays in corrective action efforts.³⁴⁶ EPA can only modify requirements imposed by regulation and not by statute.³⁴⁷ Additionally, this authority to modify standards will not apply to standards for incinerators or non-tank thermal treatment units.³⁴⁸

5. Remedy Selection Decision Factors

After weeding out proposed remedies that fail to satisfy the four standards discussed above, EPA will select the most appropriate remedy from the remaining potential remedies using five remedy selection decision criteria: (1) Long-term reliability and effectiveness; (2) reduction of toxicity, mobility, or waste volume; (3) short-term effectiveness; (4) implementability; and (5) cost.³⁴⁹ These factors are not

³⁴⁴ *Id.* at 30881.

³⁴⁵ *Id.*

³⁴⁶ *Id.* at 30841.

³⁴⁷ Examples of statutory requirements that could not be modified by EPA under the "temporary unit" concept are LDRs and minimum technology requirements. However, the temporary unit may be able to qualify for a waiver under the statutory waiver provisions for LDRs and minimum technology requirements. EPA intends to ease the statutory waiver process by treating any permit modification application needed to implement a corrective action remedy as a concurrent application for the waiver of LDRs or minimum technology requirements. EPA's subsequent issuance of a permit modification will constitute approval of the waiver application. *Id.* at 30842.

³⁴⁸ *Id.*

³⁴⁹ *Id.* at 30824; see proposed 40 C.F.R. § 264.525(b), 55 Fed. Reg. 30798, 30877 (July 27, 1990).

listed in any ranking order and no one factor has any preset relative weight. However, depending on site-specific circumstances, a certain factor or set of factors may receive particular weight during the evaluative process.³⁵⁰

a. Long-Term Reliability and Effectiveness

EPA will prefer any remedy that leads to long term protection of human health and the environment. Remedies that incorporate preventive features, such as source control technologies rather than using a containment approach, are consistent with this special emphasis on long term protection. The "reliability" portion of this factor involves confidence that environmental damage from the contamination source will not occur in the future after the remedy has been implemented.³⁵¹

³⁵⁰ Proposed SWMU CA Rule, 55 Fed. Reg. 30798, 30824 (July 27, 1990).

³⁵¹ *Id.*

b. Reduction of Toxicity, Mobility, or Volume

Consideration of the remedy's reduction of contaminant toxicity, mobility, or volume emphasizes permanent reduction of the risk posed by the wastes and is directly related to the broader goal of long-term reliability. Treatment to reduce toxicity or volume of wastes will increase confidence that the waste will not pose as significant a threat as in its untreated condition. Circumstances may arise, however, where the short-term risks of treatment (e.g., extremely volatile wastes or where disturbance of the waste may lead to greater releases) outweigh the long-term benefit of treatment.³⁵²

c. Short-Term Effectiveness

The remedy's immediate effectiveness is instrumental where high population exposure to the risk exists. Examples include remedial activities in densely populated areas and where workers on an affected facility are exposed to significant risks due to the waste's characteristics.³⁵³

d. Implementability

An alternative remedy that survives the CMS identifying process usually has been analyzed extensively by the owner/operator for its implementability. EPA will consider the proposed technologies in each remedy and how implementation of these technologies may affect the remedial process. As an example, EPA explains that certain technologies will require state or local permits prior to

³⁵² *Id.*

³⁵³ *Id.*

implementation, and the permitting process may slow the remedial process.³⁵⁴

³⁵⁴ *Id.*

e. Cost

EPA believes cost is a "relevant and appropriate consideration" during evaluation of remedy options that achieve the clean up levels.³⁵⁵ Where various technical alternative remedies offer the same level of protection of health and the environment, but the costs for implementing the alternatives vary, EPA states consideration of costs in the remedy selection process is warranted.³⁵⁶

6. Conditional Remedies

Owners/operators can realize significant savings of remediation costs if they were allowed to defer implementation of portions of an overall remedy. Relying on several key differences between RCRA facilities and Superfund sites, EPA proposes an approach that would allow TSD facility owner/operators to defer portions of their cleanup until a specified time if certain conditions were fulfilled. This concept of conditional remedies allows existing contamination to remain within the facility boundary for a site-specific time period, if the owner/operator: (1) Ensures media cleanup standards were met for any releases that migrated beyond the facility boundary as soon as practicable; (2) implements source control measures; (3) controls any further migration of on-site contamination; and (4) provides financial assurance for the ultimate completion of remediation.³⁵⁷

The differences between Superfund sites and RCRA facilities cited by EPA to justify the conditional remedy approach for corrective action are: (1) RCRA facilities are usually actively managed properties with viable owners/operators, under a regulatory permitting scheme, who can restrict access to the

³⁵⁵ *Id.*

³⁵⁶ *Id.*

³⁵⁷ *Id.* at 30833; *see* proposed 40 C.F.R. § 264.525(f), 55 Fed. Reg. 30798, 30879 (July 27, 1990).

property (and exposure to contamination), whereas Superfund sites are typically unrestricted and not subject to a regulatory waste management control program; and (2) most RCRA facilities pose lower health and environmental risks than Superfund sites; therefore, RCRA sites do not usually require urgent, complete remediation as do Superfund sites.³⁵⁸

EPA or an authorized state agency would have the discretion to determine when conditional remedies would be appropriate at any given facility.³⁵⁹ Their decision would rest on facility-specific factors, such as the nature of the contamination, owner/operator viability, level of risk, and local public concerns. A prime example of when a conditional remedy would be appropriate involves a large, remote facility, with releases that are now controlled and no longer pose a current threat and which is owned/operated by a party providing reasonable assurances of maintaining an effective, long-term presence at the facility. A conditional remedy would not be appropriate at a facility with a contaminated ground water plume whose migration cannot be controlled.³⁶⁰

7. Remedy Design, Implementation, and Completion

The corrective action process concludes with remedy design, implementation, and completion pursuant to the permit's compliance schedule. Completion of corrective action occurs after three conditions are met: (1) compliance with all MCSs; (2) source control requirements have been satisfied; and (3) remediation equipment and units have been removed or decontaminated pursuant to the permit requirements.³⁶¹ The permittee and an independent professional qualified in the applicable technical

³⁵⁸ *Id.*

³⁵⁹ Proposed SWMU CA Rule, 55 Fed. Reg. 30798, 30833 (July 27, 1990).

³⁶⁰ *Id.*

³⁶¹ *Id.* at 30837; see proposed 40 C.F.R. § 264.530(a), 55 Fed. Reg. 30798, 30880 (July 27, 1990).

discipline must certify completion of the remedy pursuant to the permit conditions.³⁶²

Remedies required under 40 C.F.R. Part 264, Subpart S will be considered complete only after all remedial measures at the *facility* are completed. If a facility has several SWMUs undergoing remedial action, remedial activities at all of the facility's SWMUs must be completed before EPA considers corrective action at the facility to be complete. In situations where separate remedial activities address releases to different media and the releases are widely separated on the facility, the Regional Administrator may allow certifications of partial completion. This would free the owner/operator from a portion of the financial assurance requirements.³⁶³

³⁶² Proposed 40 C.F.R. § 264.530(b), 55 Fed. Reg. 30798, 30838 (July 27, 1990).

³⁶³ Proposed 40 C.F.R. § 264.530(d), 55 Fed. Reg. 30798, 30838 (July 27, 1990).

V. CERCLA and Comparisons with RCRA

For purposes of this paper and due to the wide scope of provisions and issues in CERCLA, only portions of CERCLA and the NCP relevant for comparison to RCRA and its corrective action will be discussed and compared.

A. Background

In 1980, nearly four years after the passage of RCRA, Congress enacted CERCLA³⁶⁴ to address serious threats to public health and the environment resulting from releases of hazardous substances. These releases typically were from accidental spills and past unsafe management activities involving hazardous substances. In CERCLA, as amended in 1986 by the Superfund Amendments and Reauthorization Act (SARA),³⁶⁵ Congress vested EPA with considerable authority to administer a national response action program aimed at cleaning up sites that posed a more significant threat to human health and the environment. Due to sheer size and number of potential sites requiring remedial action, EPA's enforcement efforts and implementation of federally-funded response actions dictated the tempo of cleanup efforts.

CERCLA is primarily response-oriented in that it focuses on "past sins". Several features of the Superfund program could be construed as preventive, such as its applicability to "threats of release" of hazardous substances and its insistence on source control measures in developing response action strategies.

Conversely, RCRA's Subtitle C and corrective action programs are generally preventive in nature.

³⁶⁴ Pub. L. No. 96-510, 94 Stat. 2772 (1980).

³⁶⁵ Pub. L. No. 99-499, 100 Stat. 1625 (1986).

Subtitle C's "cradle-to-grave" regulation of hazardous waste management activities is designed to prevent future hazardous waste catastrophes and Superfund sites. CERCLA has no comparable regulatory program to prevent future mismanagement of hazard substances.

RCRA's corrective action programs focus on cleaning up releases of hazardous wastes while a viable owner/operator is conducting *ongoing* hazardous waste activities. However, the SWMU corrective action program complements Superfund's "clean up past sins" approach by requiring SWMU cleanups regardless of how long ago the SWMU last received solid wastes. After a TSD facility is permitted (post-HSWA), all SWMUs on the facility become subject to SWMU corrective action.

As will be discussed in the following section, several procedural and substantive dissimilarities between these two programs exist. These dissimilarities can become more apparent when a facility can technically be subject to both programs, but for policy reasons, will primarily be addressed by EPA under only one. Given EPA's assurances that the Agency intends to "achieve substantive consistency" between the SWMU corrective action and CERCLA remedial action programs,³⁶⁶ it remains to be seen how EPA will exercise its more abundant discretionary authority under the RCRA corrective action program.

³⁶⁶ See Proposed SWMU CA Rule, 55 Fed. Reg. 30798, 30852 (July 27, 1990).

B. Scope of Superfund Program

CERCLA § 104(a) authorizes EPA, on its own initiative, to implement Federally-funded response actions "consistent with the national contingency plan" to the release or substantial threat of release of: (1) Hazardous substances, or (2) pollutants or contaminants which may pose an imminent and substantial danger to public health and welfare.³⁶⁷ For responses to a release or threat of release of "pollutants or contaminants," EPA must find the existence of an imminent and substantial endangerment to public health, welfare, or the environment.³⁶⁸ Subject to the savings clause in that section³⁶⁹, CERCLA § 104(a) specifically prohibits Superfund responses to any of the following three situations: (1) Naturally occurring releases of unaltered substances, such as radon; (2) releases from products, such as asbestos, which are part of, and result in exposure within residential, business, or community structures; and (3) releases into public or private drinking water supplies resulting from ordinary deterioration of the drinking water system, such as lead contamination resulting from the presence of lead within the plumbing system.³⁷⁰

³⁶⁷ 42 U.S.C. § 9604(a) (1988).

³⁶⁸ 42 U.S.C. §§ 9604(a) and 9696(a) (1988). RCRA § 7003 and several provisions in CERCLA use the "imminent and substantial endangerment" terminology (or a close variation thereof). It is not defined in either CERCLA or RCRA. The courts have been fairly deferential to EPA's invocation of authority under these "imminent and substantial endangerment" provisions. *See, e.g.*, U.S. v. Dickerson, 660 F.Supp. 227 (D.C.M.D. Ga. 1987); Reilly U.S. v. Vertac Chemical Corp., 489 F.Supp. 870 (E.D. Ark. 1980).

³⁶⁹ CERCLA § 104(a)(4) provides that, notwithstanding the limitations in Section 104(a)(3)(A)-(C), the President may conduct CERCLA response actions for those situations if an emergency situation exists and no other agency is capable of addressing the problems. 42 U.S.C. § 9604(a)(4) (1988).

³⁷⁰ 42 U.S.C. § 9604(a)(3) (1988).

1. Superfund "Release"

CERCLA § 101(22) defines "release" as any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment. Also included is the abandonment or discarding of closed containers containing hazardous substances. No time limit to the retroactive application of CERCLA is specified in the definition or the remainder of the statute. Response actions under CERCLA can be taken to past releases or to releases resulting from past mismanaged activities, no matter how long ago they occurred. Additionally, neither the definition of "release" nor any other key operative terms in CERCLA § 104(a) specify any threshold amount, except that the release poses or may pose a threat to human health and the environment.³⁷¹ Excluded from the definition of "releases" are releases in the workplace which cause exposure only to workers, releases from motor vehicle engine exhausts, releases of certain radioactive materials from nuclear incidents, and releases from normal fertilizer applications.³⁷²

Except for the exclusions to CERCLA's definition of "release", RCRA essentially adopts the same definition of "release", including the "any" amount inference, to trigger corrective action under Sections 3004(u) and (v). As a practical matter, EPA uses ACLs as threshold concentrations for initiating the corrective action process. RCRA § 3004(u) qualifies the expansive scope of the "release" definition by requiring that the release come *from any SWMU at a TSD facility*. CERCLA does not similarly restrict its jurisdiction to SWMUs or TSD facilities. Additionally, the Proposed SWMU CA Rule states that a

³⁷¹ Threshold quantity amounts, referred to as "reportable quantities", are used to trigger requirements to report releases exceeding these threshold amounts to the National Response Center. See 42 U.S.C. § 9602 (1988); 40 C.F.R. § 302 (1990). However, only the reporting requirements of CERCLA are limited by the reportable quantities. CERCLA liability (duty to cleanup) is not limited to situations where releases exceed reportable quantities. EPA Solid Waste Division General Counsel Opinion to Regional Counsel, Re: Liability under CERCLA for Releases of Hazardous Substances in Amounts Less than "Reportable Quantities" (Dec. 15, 1982).

³⁷² 42 U.S.C. § 9601(22) (1988).

one-time spill at an area within the facility does not necessarily convert that area into a SWMU. To be a SWMU, solid wastes must have been "routinely and systematically" released.³⁷³ Under CERCLA, a one-time spill is sufficient to trigger its jurisdiction.

Although not expressly listed as an exclusion in CERCLA's or the NCP's definition of "release", federally-permitted releases could be excluded under any future expanded EPA "deferral policy"³⁷⁴ if the applicable federal program governing the permit can adequately respond to any threats to human health and the environment resulting from the permitted release. This would be consistent with EPA's interpretation of release under RCRA.

2. Hazardous Substance

CERCLA § 101(14) defines hazardous substances as: (1) Any EPA-designated hazardous substances pursuant to Section 311(b)(2)(A) of the Clean Water Act;³⁷⁵ (2) any toxic pollutant listed under Section 307(a) of the Clean Water Act;³⁷⁶ (3) any RCRA hazardous waste; (4) any hazardous air pollutant listed under Section 112 of the Clean Air Act;³⁷⁷ (5) any acutely hazardous chemical substance or mixture regulated by Section 7 of the Toxic Substance Control Act;³⁷⁸ and (6) any other substance designated as hazardous pursuant to CERCLA § 102.³⁷⁹ CERCLA §101(14) specifically

³⁷³ Proposed 40 C.F.R. § 264.501, 55 Fed. Reg. 30798, 30874 (July 27, 1990).

³⁷⁴ See *infra* notes 585-91 and accompanying text on EPA's deferral policy.

³⁷⁵ 33 U.S.C. § 1321(b)(2)(A) (1988).

³⁷⁶ 33 U.S.C. § 1317(a) (1988).

³⁷⁷ 42 U.S.C. § 7412(b) (1988).

³⁷⁸ 15 U.S.C. § 2606(f) (1988).

³⁷⁹ 42 U.S.C. § 9602 (1988).

excludes petroleum, natural gas, liquified natural gas, or synthetic gas fuels.³⁸⁰

By statutory definition, RCRA hazardous waste is always a CERCLA hazardous substance. This would include any RCRA wastes deemed hazardous by operation of the "mixture" or "derived-from" rules.

³⁸⁰ 42 U.S.C. § 9601(14) (1988).

C. Response Actions

Federally-funded response actions under CERCLA consist of two categories: (1) Removal actions; and (2) remedial actions. Removal actions consist of any necessary interim measures to monitor, assess,³⁸¹ evaluate, mitigate, remove, and control risk to releases of hazardous substances.³⁸² Usually, removal actions can be implemented with relatively little advance detailed planning or study. They are primarily intended to provide immediate but temporary protection of human health and the environment.

Remedial actions are measures which are consistent with a permanent remedy and taken in lieu of, or in conjunction with, removal actions to prevent or minimize risk from a release of hazardous substances.³⁸³ Such measures include a plethora of activities such as storage, confinement, neutralization, cleanup, destruction, segregation of wastes, and even permanent relocation of surrounding communities.³⁸⁴ Remedial actions are intended to provide a long-term, permanent remedy to a release or threat of release of hazardous substances.³⁸⁵

The amounts of funding and the CERCLA implementation process differ for removal and remedial

³⁸¹ CERCLA § 101(23) defines "removal" to include "such actions as may be necessary to monitor, assess and evaluate the release or threat of release . . . [and] action taken under Section 104(b) of this Act . . . which authorizes the Agency to perform studies, investigations, and other information-gathering activities." 42 U.S.C. § 9601(23) (1988). A remedial investigation and feasibility study funded by Superfund, subject to some monetary and time limitations, could be performed at both NPL and non-NPL sites pursuant to this removal authority. Removal actions are not limited to sites that are on the NPL. *See* National Priorities List for Uncontrolled Hazardous Waste Sites - Final Rule Converting [sic] Sites Subject to the Subtitle C Corrective Action Authorities of the Resource Conservation and Recovery Act, 54 Fed. Reg. 41000, 41002 (October 4 1989) [hereafter "NPL for RCRA Sites Rule"].

³⁸² 42 U.S.C. § 9601(23) (1988).

³⁸³ 42 U.S.C. § 9601(24) (1988).

³⁸⁴ NCP, 40 C.F.R. §300.5 (1990).

³⁸⁵ 42 U.S.C. § 9601(24) (1988).

actions. Both may be funded through the Hazardous Substances Superfund (hereafter "Superfund"). Congress authorized \$1.6 billion for the Superfund in 1980; the 1986 Superfund Amendment and Reauthorization Act provided an additional \$8.5 billion.

Subject to a \$2 million maximum amount and maximum 12-month implementation period, removal actions can be entirely funded from Superfund. If certain criteria are satisfied,³⁸⁶ the limits on monetary amount and implementation period can be waived.

Remedial actions are jointly funded by Superfund and the applicable state. Superfund-financed remedial actions can only be undertaken at sites that are listed on the National Priorities List (NPL).³⁸⁷ The state must either pay a 10% or a minimum of 50% share of the costs for remedial actions, depending on the state's involvement with the facility causing the release.³⁸⁸ If the release to be remediated stems from a facility which was operated at the time of disposal of the hazardous substances by the state or one of its political subdivisions, the state must pay at least 50% of the remediation costs.³⁸⁹ In either case, the state must also pay future operation and maintenance (O&M) costs of the remedial action and must also ensure the availability of an acceptable hazardous waste disposal facility that complies with RCRA.³⁹⁰

The owner/operator bears the funding burden for RCRA § 3004(u) corrective action, subject to any private party cost recovery action under CERCLA § 107(a)(4)(B) against other potentially responsible

³⁸⁶ The criteria include: (1) Immediacy of the risk; (2) availability of response from other sources; and (3) consistency of the removal action with any remedial action that will likely be implemented. 42 U.S.C. § 9604(c)(1) (1988).

³⁸⁷ NCP, 40 C.F.R. § 300.425(b)(1) (1990). For removal actions, EPA has the authority to act at any site, regardless of whether it is listed on the NPL, so long as that site meets the criteria of the NCP at 40 C.F.R. § 300.415 (1990).

³⁸⁸ 42 U.S.C. § 9604(c)(3) (1988).

³⁸⁹ *Id.*

³⁹⁰ *Id.*

parties. However, EPA can use Superfund to undertake any corrective actions substantially similar as CERCLA removal responses and not inconsistent with the NCP at a RCRA site, even if the site is not on the NPL. For example, a CERCLA remedial investigation is considered a removal response and is analogous to a RCRA RFI. An RFI may be a required corrective action response at a RCRA site with a release of hazardous contaminants. If, for whatever reason, the owner/operator will not or cannot perform the necessary RFI, then EPA can use its removal authority to conduct the RFI. Removal response costs can be federally-funded, regardless of whether the site is on the NPL. The amount and duration of the removal response would be subject to the limitations in CERCLA § 104(c)(3).³⁹¹

³⁹¹ 42 U.S.C. § 9604(c)(3) (1988).

D. National Priorities List

The NPL is an EPA-prepared list of national priority releases, sites, or facilities which appear to warrant CERCLA remedial action. The NPL represents those sites EPA has prioritized by magnitude of presented risk. However, the priority list serves primarily informational purposes; EPA is not bound to prioritize its response efforts to those with the higher ranking.³⁹² There are three methods for placing sites on the NPL: (1) scoring under the Hazard Ranking System (HRS), which is the principal method;³⁹³ (2) state designation of a single site within the state as its top priority, regardless of the site's HRS score;³⁹⁴ and (3) identification by the Agency for Toxic Substances and Disease Registry via a health threat advisory where EPA concurs that the site is a public threat and would prefer to remediate rather use its removal authority.³⁹⁵

EPA uses the HRS to evaluate several site-specific criteria and arrive at an overall, "objective" score on a scale of 0 to 100 for the site. Prior to implementation of the recently revised HRS that became effective on March 14, 1991,³⁹⁶ EPA could place any site with an overall HRS score of 28.5 or higher on the NPL, subject to certain exclusions (e.g., problem sites that could be addressed under another regulatory program). EPA does not have to stagger cleanup efforts for NPL sites based on their

³⁹² See NPL for RCRA Sites Rule, 54 Fed. Reg. 41000, 41001 (October 4, 1989).

³⁹³ *Id.* at 41003.

³⁹⁴ 42 U.S.C. § 9605(a)(8)(B) (1988).

³⁹⁵ NCP, 40 C.F.R. §300.66(b)(4) (1990).

³⁹⁶ In response to CERCLA § 105(c), added by SARA and codified at 42 U.S.C. § 9605(c) (1988), EPA finalized revisions to the HRS, with an effective date of March 14, 1991 for these revisions. The revised HRS (HRS II) more thoroughly evaluates exposure targets and pathways that were not considered under the original HRS (HRS I). See 55 Fed. Reg. 51532 (December 14, 1990). EPA continued to use the preexisting HRS until the effective date of the revision pursuant to CERCLA § 105(c)(1). See 54 Fed. Reg. 13299 (March 31, 1989).

priority ranking. The NPL is periodically updated, but not less than once a year.³⁹⁷ Any site deleted from the NPL remains eligible for further Superfund-financed remedial action if future conditions warrant such action.³⁹⁸

³⁹⁷ 42 U.S.C. § 9605(a)(8)(B) (1988).

³⁹⁸ NCP, 40 C.F.R. § 300.425(e)(3) (1990).

E. Section 106 Orders

In addition to Section 104 provision for Superfund-financed response actions, EPA has authority under Section 106 of CERCLA to unilaterally issue administrative orders or seek judicial relief to require abatement of an actual or threatened release that may be an imminent and substantial endangerment to public health, welfare, or the environment.³⁹⁹ Section 106 authority is primarily used to compel potentially responsible parties (PRPs) to clean up CERCLA sites. Any person who willfully violates or refuses to comply with a Section 106 order may be assessed a maximum civil penalty of \$25,000 per day of violation or noncompliance.⁴⁰⁰ A Section 106 administrative order can be issued on consent, usually involving some form of settlement between EPA and the PRP; but, any settlement arising from a Section 106 consent order must comply with the settlement provisions of Section 122 of CERCLA.⁴⁰¹ Section 106 administrative orders are not subject to pre-enforcement judicial review.⁴⁰²

Under RCRA, enforcement actions can be brought under Section 7003 if an imminent hazard exists; Section 3013 to conduct investigations and studies; Section 3008(h) to order corrective action at interim status facilities; and Section 3008(a) to revoke or suspend permits and order compliance with any RCRA Subtitle C requirement, including cleanups for releases resulting from a violation of a RCRA Subtitle C

³⁹⁹ 42 U.S.C. § 9606 (1988). "Unilaterally" means the recipient of the order is not provided the opportunity for a formal hearing prior to issuance of the order. However, as a matter of policy, EPA may informally confer with the recipient prior to the effective date of the order. Under RCRA, issuance of administrative orders involves more extensive administrative due process and appeal rights.

⁴⁰⁰ 42 U.S.C. § 9606(b) (1988). Section 104(e) provides EPA with information gathering and site access authority. EPA can issue a compliance order under Section 104(e) if the PRP refuses to consent to EPA's request for information or site access. Noncompliance with a Section 104(e) order can also result in a maximum civil penalty of \$25,000 per day of noncompliance. 42 U.S.C. § 9604(e)(5) (1988).

⁴⁰¹ 42 U.S.C. § 9622 (1988).

⁴⁰² 42 U.S.C. § 9613(h) (1988).

regulatory requirement. Contrary to the preenforcement judicial nonreviewability of CERCLA § 106 orders, administrative orders under RCRA can be judicially reviewed prior to enforcement.⁴⁰³ Settlements of RCRA enforcement orders are not subject to the same limitations contained in CERCLA §122 but do require opportunity for public participation.⁴⁰⁴

⁴⁰³ See RCRA § 7006, 42 U.S.C. § 6976 (1988).

⁴⁰⁴ See RCRA § 7003, 42 U.S.C. § 6973 (1988).

F. Superfund Liability

Congress intended CERCLA and the Superfund concept to allow the Federal Government (or a state or private party) to recover its response costs from certain responsible parties. Section 107 of CERCLA provides this authority.⁴⁰⁵ The Government, states, and Indian tribes may recover all costs of removal or remedial action conducted in a manner "not inconsistent with" the NCP.⁴⁰⁶ Unlike any provision in RCRA, any PRP who, without sufficient cause, violates or refuses to comply with a Section 106 order to conduct a cleanup which the Government subsequently accomplishes with Superfund monies may be liable for punitive damages equal to three times the response costs incurred by the Superfund.⁴⁰⁷ These treble damages are in addition to any recoveries against the PRP by the Government resulting from subrogative rights of the Government after it has reimbursed a third party's response costs under Section 112(c).⁴⁰⁸ Any other party who conducts the response action "consistent with" the NCP may recover these costs from responsible parties.⁴⁰⁹ Section 107 also describes what parties are liable for reimbursement and what costs are recoverable.⁴¹⁰

⁴⁰⁵ 42 U.S.C. § 9607 (1988).

⁴⁰⁶ 42 U.S.C. § 9607(a)(4)(A) (1988).

⁴⁰⁷ 42 U.S.C. § 9607(c) (1988).

⁴⁰⁸ 42 U.S.C. § 9607(c) (1988); *see* 42 U.S.C. § 9612(c)(3) (1988) (provision allowing a non-PRP third party who performs response actions consistent with NCP to file claim against the Government for reimbursement of response costs from the Superfund).

⁴⁰⁹ *Id.*

⁴¹⁰ *Id.*

G. Responsible Parties

Four designated classes of PRPs are liable for response action costs: (1) The current owner/operator of the site or facility [current owner/operator]; (2) any person who owned or operated the site or facility when the disposal of hazardous substances occurred [past owner/operator]; (3) any person who arranged for the treatment or disposal of his/her hazardous substances at the site or facility [generator]; and (4) any person who transported the hazardous substances and selected the affected site or facility for treatment or disposal [transporter].⁴¹¹ CERCLA liability is retroactive in two respects: (1) PRPs are liable for costs of response actions to address acts that occurred prior to CERCLA's enactment;⁴¹² and (2) PRPs are liable for response action costs incurred prior to CERCLA's enactment.⁴¹³

Under RCRA authorities, EPA can only order corrective action against the current owners or operators of the TSD facility. As will be discussed later in the "EPA's Deferral Policy" section of this paper, if the RCRA facility also qualifies for listing on the NPL but is deferred by EPA to be addressed by RCRA corrective action authorities, EPA can nevertheless apply its CERCLA § 104 removal authority and, if an imminent and substantial danger exists, CERCLA § 106 enforcement action.

⁴¹¹ 42 U.S.C. § 9607(a)(1)-(4) (1988).

⁴¹² See *Mayor and Board of Aldermen of the Town of Boonton v. Drew Chemical Corp.*, 621 F.Supp. 663 (D.N.J. 1985); *U.S. v. Shell Oil Co.*, 604 F.Supp. 1064 (D.Colo. 1985).

⁴¹³ *Shell Oil Co.*, 605 F.Supp. at 1073.

H. Standard and Scope of Liability

Although CERCLA does not explicitly describe the standard of liability for PRPs, Section 101(32) provides that the standard under CERCLA will be the same standard imposed by Section 311 of the Clean Water Act.⁴¹⁴ That standard has been interpreted to be a strict liability standard.⁴¹⁵ The only defenses to liability are those narrow defenses listed in Section 107(b).⁴¹⁶

Again, CERCLA does not mention a PRP's scope of liability in the case of multiple PRPs for a single site or facility. Most judicial decisions have held that PRPs are jointly and severally liable when the extent of harm resulting from actions of the PRPs is indivisible.⁴¹⁷ If a PRP could clearly prove the divisibility of harm resulting his/her actions, then, theoretically, the PRP's liability could be apportioned.⁴¹⁸

RCRA imposes a similar strict liability standard, but only on the current owner or operator of the facility. RCRA does not address the issue of whether joint and several liability would apply if there are multiple owners and operators. For those RCRA sites where CERCLA also could apply, EPA could use

⁴¹⁴ 42 U.S.C. § 9601(32) (1988); 33 U.S.C. § 1321 (1988).

⁴¹⁵ See *U.S. v. Chem-Dyne Corp.*, 572 F.Supp. 802 (S.D.Ohio 1983) (citing *Stuart Transportation Co. v. U.S.*, 596 F.2d 609, 613 [4th Cir. 1979]).

⁴¹⁶ The defenses are that the release of the hazardous substance and the damages resulting from the release were caused solely by: (1) An act of God; (2) an act of war; (3) an act or omission by a third party not affiliated with the defendant so long as the defendant can show his/her exercise of due care in handling the hazardous substance and in efforts to prevent such a release; or (4) any combination of the above. 42 U.S.C. § 9607(b) (1988).

⁴¹⁷ See *U.S. v. Conservation Chemical Co.*, 589 F.Supp. 59 (W.D.Mo. 1984); *Chem-Dyne Corp.*, 572 F.Supp. at 805, 808.

⁴¹⁸ *Chem-Dyne Corp.*, 572 F.Supp. at 810. The 1986 SARA Amendments to CERCLA explicitly provide a right of contribution among PRPs. 42 U.S.C. § 9613(f) (1988). Additionally, a PRP who settles his/her portion of liability with the Federal Government is immune from contribution suits by the other PRPs. 42 U.S.C. § 9613(f)(2) (1988).

authorities under both statutes, such as corrective action orders and CERCLA §106 orders, to develop a feasible solution to a multiple party scenario where one party is unwilling to contribute.⁴¹⁹

I. Recoverable Costs

Under CERCLA, PRPs are liable for: (1) All response costs incurred by the U.S. or state in connection with the removal or remediation of the hazardous, so long as the response action was not inconsistent with the NCP; (2) any other necessary response costs incurred by any other person in connection with response action that was consistent with the NCP; (3) natural resource damages resulting from a post-CERCLA enactment release; (4) costs of any Agency for Toxic Substances and Disease Registry (ATSDR) health assessments or health studies authorized by SARA; (5) interest from when the costs were incurred or the date of demand for reimbursement, whichever was later;⁴²⁰ and (6) punitive damages of treble response costs if the PRP refused to comply with a Section 106 administrative abatement order and EPA subsequently had to conduct a Superfunded-response.⁴²¹ Section 107(c) provides certain liability limits, depending on the culpability of the PRP.

At RCRA sites, the issue of cost recoverability is not as significant because of the absence of a Superfund concept. Corrective action is funded by the current owner/operator. In those situations where EPA undertakes removal actions under CERCLA § 104 at a dual qualified RCRA/CERCLA facility, EPA can recover its costs from anyone who had been affiliated with the site as a PRP. Also, EPA has RCRA § 3013 authority to conduct investigations and studies at RCRA facilities and require the owner/operator

⁴¹⁹ See NPL for RCRA Sites Rule, 54 Fed. Reg. 41000, 41007 (October 4, 1989).

⁴²⁰ 42 U.S.C. § 9607(a)(4)(A)-(D) (1988).

⁴²¹ 42 U.S.C. § 9607(c)(3) (1988).

to reimburse EPA's costs.⁴²²

⁴²² See NPL for RCRA Sites Rule, 54 Fed. Reg. 41000, 41007 (October 4, 1989).

J. Private Recovery

CERCLA § 107(a)(4)(B) provides a mechanism for private parties to recover their response costs from PRPs in federal district court if the response action was conducted in a manner "consistent with the NCP."⁴²³ The party seeking recovery may even be one of the PRPs. Again, the only defenses that can be raised by the defendant are those narrow defenses listed in Section 107(b) and any issues relating to whether the response action was consistent with the NCP.

The issue of whether a private party response action was consistent with the NCP has been a highly controversial and litigated issue.⁴²⁴ The new NCP will deem this requirement satisfied if a private party cleanup, when evaluated as a whole, has substantially complied with potentially applicable NCP requirements and resulted in a CERCLA-quality cleanup.⁴²⁵ A CERCLA-quality cleanup is a remedial action that essentially complies with the nine criteria used by EPA to select the appropriate remedy from various alternative remedies.⁴²⁶

In addition to the Section 107 cost recovery provision, Section 106(b) allows, under certain conditions, a compliant private party to subsequently file a claim against the Superfund for all or a portion of his/her response costs and any accrued interest incurred as a result of his/her compliance with any Section 106(a) order issued after October 16, 1986 (enactment date of SARA).⁴²⁷ The party

⁴²³ 42 U.S.C. § 9607(a)(4)(B) (1988).

⁴²⁴ *See, e.g.,* General Electric Co. v. Litton Business Systems, 715 F.Supp. 949 (W.D.Mo. 1989); Amland Properties Corp. v. Aluminum Co. of America, 711 F.Supp. 784 (D.N.J. 1989).

⁴²⁵ NCP, 40 C.F.R. § 300.700(c)(3) (1990).

⁴²⁶ National Oil and Hazardous Substances Pollution Contingency Plan, 55 Fed. Reg. 8666, 8793 (March 8, 1990) [hereafter "1990 NCP Revision"].

⁴²⁷ 42 U.S.C. § 9606(b) (1988); *see* 1990 NCP Revision, 55 Fed. Reg. 8666, 8799 (March 8, 1990).

must demonstrate one of the following: (1) He/she was not liable as a PRP and the claimed costs are reasonable in regards to the order;⁴²⁸ or (2) even if the party was liable as a PRP, the response specified in the order was arbitrary and capricious or otherwise not in accordance with law.⁴²⁹ In the latter situation, the party would only recover the reasonable costs he/she incurred from complying with the unreasonable portion of the administrative order.⁴³⁰

As mentioned earlier, EPA can elect to initiate enforcement action under CERCLA § 106 at RCRA sites with several PRPs.⁴³¹ EPA generally prefers to apply RCRA authorities at RCRA sites pursuant to its "deferral policy"⁴³² to avoid duplication and delays. If EPA instead proceeded against only the owner/operator under RCRA, the owner/operator can recover costs from other PRPs (e.g., past owners/operators, generators, and certain transporters) under CERCLA § 107(a)(4)(B).⁴³³ To succeed in a cost recovery action under Section 107, the owner/operator must show that: (1) the costs incurred under RCRA were in response to a release of "hazardous substances" (which hazardous wastes are); (2) the party against whom recovery of costs is sought is a "liable" PRP under CERCLA § 107; and (3) the owner/operator's RCRA corrective action response was consistent with the NCP.

⁴²⁸ 42 U.S.C. § 9606(b)(2)(C) (1988).

⁴²⁹ 42 U.S.C. § 9606(b)(2)(D) (1988).

⁴³⁰ *Id.*

⁴³¹ See NPL for RCRA Sites Rule, 54 Fed. Reg. 41000, 41002 (October 4, 1989).

⁴³² *Id.* at 41001. The "deferral policy" is EPA's preference to defer listing sites on the NPL that could be addressed by the RCRA corrective action program, even though CERCLA would allow listing RCRA sites fulfilling the NPL eligibility criteria. See *infra* notes 585-617 and accompanying text.

⁴³³ See *Chemical Waste Management v. Armstrong World Industries*, 669 F.Supp. 1285 (E.D.Pa. 1987); *Mardan Corp. v. CGC Music, Ltd.*, 600 F.Supp. 1049 (D.Ariz. 1984), *aff'd*, 849 F.2d 1454 (9th Cir. 1986).

VI. National Contingency Plan

CERCLA § 105 provides EPA the authority to promulgate the NCP.⁴³⁴ The NCP describes, in detail, the procedures and criteria for implementing the Superfund program. Many other CERCLA provisions, such as cost recovery and funding of response actions, depend on compliance with the NCP.

In devising the NCP for Superfund purposes, EPA constantly faced the controversial issues of what protective standards must remediation achieve and whether national protective standards, rather than site-specific standards, should be promulgated and applied. In a broader sense, these issues created what appeared to be dichotomous concerns of retaining regulatory flexibility in addressing remedial actions and providing consistent "guidance" and assurances to remediators and the environmental community.

Prior to 1986, Congress did not provide EPA with a statutory framework to resolve this dilemma. Due to criticisms and litigation⁴³⁵ concerning EPA's failure to *require* minimum levels of hazardous substance removal, EPA agreed in 1984 to require the use of relevant quantitative health and environmental criteria of other EPA programs and substantive portions of other federal, state, and local environmental laws.⁴³⁶ But, EPA maintained that determinations of ARARs would be made on a site-by-site basis. This was the genesis of "applicable or relevant and appropriate requirements" (ARARs).

In the 1986 SARA Amendments, Congress codified EPA's ARAR-compliance concept and concurred with EPA that ARARs determinations were to be made on a site-by-site basis. However, Congress added other stipulations, such as additional ARARs and a preference for remedies that provided for long-

⁴³⁴ 42 U.S.C. § 9605 (1988).

⁴³⁵ See *EDF v. EPA*, No. 82-2234 (D.C.Cir. 1984); *New Jersey v. EPA*, No. 82-2238 (D.C.Cir. 1984).

⁴³⁶ See 1985 NCP, 50 Fed. Reg. 47912, 47946 (Nov. 20, 1985).

term protection.⁴³⁷ RCRA was specifically included as statutory source of potential ARARs.⁴³⁸ Congress also specified other broad requirements for remedy selection which, because of their diversity, appeared to set dichotomous goals (e.g., cost-effective remedies and permanent remedies). Given this mixed mandate and after a laborious process to drastically revise the NCP, EPA promulgated its most recent version of the NCP on March 8, 1990, with an effective implementation date of April 9, 1990.⁴³⁹

⁴³⁷ Prior to SARA, EPA placed the potential ARAR standards added by Congress on its secondary "to be considered" (TBC) list. Generally, TBCs are criteria and guidance that did not have to be used in establishing cleanup levels. TBCs are used to help develop a standard in the absence of an ARAR. The potential ARAR standards added by SARA which conflicted with EPA's TBC determination include state standards that are more stringent than federal standards, maximum contaminant level goals (MCLGs) from the SDWA, and federal water quality criteria from the Clean Water Act. 42 U.S.C. § 9621(d)(2)(A) (1988).

⁴³⁸ *Id.*

⁴³⁹ NCP, 40 C.F.R. § 300 (1990); *See* 1990 NCP Revision, 55 Fed. Reg. 8666 (March 8, 1990).

**A. Applicable or Relevant and
Appropriate Requirements (ARARs)**

Subject to limited waivers, compliance with ARARs is a significant statutory requirement for CERCLA remedy selection.⁴⁴⁰ A requirement cannot be both "applicable" and "relevant and appropriate." The difference between the two is significant because an "applicable" requirement severely constricts EPA's discretion in identifying the requirement as an ARAR.⁴⁴¹ "Applicable" requirements are substantive standards and criteria for cleanup, control, and other protective measures from federal or state environmental laws or regulations which specifically address a contamination problem at a site, and therefore legally apply to the implementation or level of site cleanup pursuant to the language in CERCLA § 121(d).⁴⁴² "Relevant and appropriate" standards, while not legally applicable to the specific site situation (other than by operation of CERCLA § 121[d]), address environmental problems and circumstances similar enough to the CERCLA site situation that warrant, in EPA's discretion, use as a standard.⁴⁴³

ARARs must be substantive,⁴⁴⁴ promulgated,⁴⁴⁵ an environmental standard,⁴⁴⁶ and

⁴⁴⁰ 42 U.S.C. § 9621(d)(2)(A) and (d)(4) (1988).

⁴⁴¹ See Proposed NCP Revision, 53 Fed. Reg. 51394, 51436 (Dec. 21, 1988).

⁴⁴² 42 U.S.C. § 9621(d) (1988). See Proposed NCP Revision, 53 Fed. Reg. 51394, 51436 (Dec. 21, 1988).

⁴⁴³ See Proposed NCP Revision, 53 Fed. Reg. 51394, 51436 (Dec. 21, 1988).

⁴⁴⁴ NCP, 40 C.F.R. § 300.5 (1990). Administrative and procedural requirements (such as recordkeeping requirements under other Federal programs and RCRA's SWMU CA Rule requirements on how to select the corrective measure remedy or conduct site investigations) are not ARARs. See Proposed NCP Revision, 53 Fed. Reg. 51394, 51443 and 51445 (Dec. 21, 1988).

⁴⁴⁵ NCP, 40 C.F.R. § 300.400(g)(4) (1990).

⁴⁴⁶ 42 U.S.C. § 9621(d)(2)(A) (1988).

limited to on-site actions.⁴⁴⁷ State requirements must also be timely published, more stringent than federal requirements, in the form of a mandate rather than merely a goal, and consistently applied.⁴⁴⁸

Substantive standards and requirements that are potential ARARs can be categorized as chemical-specific, action-specific, and location-specific.⁴⁴⁹ Chemical-specific ARARs are health or environmentally based concentration levels which limit the amount of contaminant that is allowed to be discharged to or remain in an environmental media, such as MCLs established under the SDWA.⁴⁵⁰ Action-specific ARARs are technology- or activity-based restrictions on hazardous waste management activities or requirements to perform certain activities to address specific circumstances at a site, such as RCRA land disposal restrictions, which could also be considered chemical-specific ARARs.⁴⁵¹ Location-specific ARARs are restrictions on regarding the allowable concentration of hazardous substances or allowable activities at special locations, such as a floodplain or wetland.⁴⁵² Except to the extent land disposal restrictions can also be considered chemical-specific ARARs (by virtue of BDAT treatment standards imposed by EPA), RCRA standards and requirements which are incorporated as potential ARARs are generally action-specific.⁴⁵³

ARARs serve two roles in the CERCLA remedy selection process. First, the chemical-specific, and in some cases, location-specific ARARs help establish the remediation goals in that they serve as

⁴⁴⁷ *Id.*

⁴⁴⁸ 42 U.S.C. § 9621(d)(2) (1988).

⁴⁴⁹ Proposed NCP Revision, 53 Fed. Reg. 51394, 51437 (Dec. 21, 1988).

⁴⁵⁰ *Id.*

⁴⁵¹ *Id.*

⁴⁵² *Id.*

⁴⁵³ See, e.g., 40 C.F.R. Part 264 (1990) (minimum technology requirements for design and operation of various types of RCRA land disposal units; facility closure requirements); 40 C.F.R. Part 268 (1990) (land disposal restrictions).

benchmark maximum concentration levels allowed after the cleanup. Secondly, the action-specific and location-specific ARARs serve as operating parameters, or restrictions, during the implementation of the selected remedy. The selected remedy must be able to meet the chemical-specific ARAR goal and do so in a manner that complies with action- and location-specific ARARs, unless a waiver from the ARAR is granted.

RCRA's land disposal restrictions, as "applicable" requirements if hazardous wastes are involved, can significantly affect how remedial activities are conducted on a Superfund site. EPA devised the CAMU concept for RCRA corrective action under Section 3004(u) to lessen the burden of the LDRs.

The "area of contamination" (AOC) concept, similar to RCRA's CAMU system, was developed by EPA for CERCLA remedial action.⁴⁵⁴ EPA recognized the impracticability of trying to remediate a site without some soil disturbance. Under the AOC concept, an area of "continuous" contamination of various amounts and types of substances at a CERCLA site is treated as a single RCRA land disposal unit,⁴⁵⁵ thus allowing movement of the waste solely within the unit without necessarily triggering the LDRs. Waste consolidation from different AOCs at a CERCLA site are subject to applicable RCRA requirements, including LDRs, regardless of the purpose of consolidation or the amount of waste involved.⁴⁵⁶

The legal basis for allowing AOCs, as well as RCRA's CAMUs, rests on EPA's interpretation of what constitutes "placement" of waste into the land. Land disposal triggers LDRs, but land disposal, by definition, requires "placement" of hazardous wastes onto land.⁴⁵⁷ EPA does not consider movement

⁴⁵⁴ See 1990 NCP Revision, 55 Fed. Reg. 8666, 8759 (March 8, 1990).

⁴⁵⁵ EPA generally equates an AOC to a single RCRA land-based unit, or landfill. See 1990 NCP Revision, 55 Fed. Reg. 8666, 8760 (March 8, 1990); NPL for RCRA Sites Rule, 54 Fed. 41000, 41444 (October 4, 1989).

⁴⁵⁶ 1990 NCP Revision, 55 Fed. Reg. 8666, 8760 (March 8, 1990).

⁴⁵⁷ 42 U.S.C. § 9604(k) (1988).

of waste solely within the unit, whether it is a CAMU or AOC, as "placement."⁴⁵⁸ If the waste was transported out of the unit for treatment and returned to the unit for disposal, LDRs apply.⁴⁵⁹ Similarly, consolidation of wastes from different AOCs at a CERCLA site, for whatever purpose, would trigger the LDRs.⁴⁶⁰ To provide additional relief to remediators whose activities may trigger the LDRs, EPA will attempt to promulgate specific BDAT standards for the typically mixed waste streams found at CERCLA sites. EPA also states it will liberally grant LDR treatability variances for CERCLA waste streams.⁴⁶¹

Fortunately for RCRA TSD facility owners/operators, Congress did not explicitly require corrective action to comply with ARARs during remedy implementation or as cleanup levels. EPA has adopted a similar concept for establishing the MCSs (remedial cleanup levels for corrective action), but EPA appears to have more discretion under RCRA in determining when or whether to apply standards or substantive requirements of other "applicable or relevant and appropriate" laws.⁴⁶² However, EPA

⁴⁵⁸ See 1990 NCP Revision, 55 Fed. Reg. 8666, 8759 (March 8, 1990).

⁴⁵⁹ *Id.* at 8760.

⁴⁶⁰ *Id.*

⁴⁶¹ BDAT treatability variances can be obtained when treatment technology is inappropriate to the waste. 40 C.F.R. § 268.44 (1990). EPA generally presumes that BDAT standards are inappropriate for contaminated soil and debris at CERCLA sites. However, where a BDAT standard exists for the waste in the contaminated soil and debris, EPA requires application of that standard unless a variance is issued. If the standard for the waste in the soil and debris is based on performance of incineration, EPA has already granted a national capacity variance for the contaminated soils and debris because of insufficient national capacity to incinerate the soil and debris. If individual petitions for a treatability variance for contaminated soil and debris are necessary, EPA will usually waive the requirement for a site-specific demonstration of the inappropriateness of the BDAT standard for treatment of soil and debris. See 1990 NCP Revision, 55 Fed. Reg. 8666, 8761-62 (March 8, 1990). Treatability variance procedures are codified at 40 C.F.R. § 268.44 (1990).

⁴⁶² *Contra* Proposed NCP Revision, 53 Fed. Reg. 51394, 51433 (Dec. 21, 1988); see 1990 NCP Revision, 55 Fed. Reg. 8666, 8751 (March 8, 1990) (preamble to revision explaining use of SDWA maximum contaminant level goals [MCLGs] as ARARs when MCLGs are set above zero) and Proposed SWMU CA Rule, 55 Fed. Reg. 30798 (July 27, 1990) (preamble to proposed rule explaining use of MCLs [not the usually more stringent MCLGs] as MCSs).

has explicitly announced that one of its objectives in developing the RCRA corrective action regulations is "to achieve substantive consistency with the policies and procedures of the remedial action program under (CERCLA)."⁴⁶³ EPA states that it intends to establish a consistent approach between RCRA and CERCLA to ensure "the regulated industry can gain no advantage by proceeding under one program rather than the other, since the Agency anticipates that similar remedies would be selected under both."⁴⁶⁴

The RCRA corrective action program also uses a "temporary unit" concept whereby EPA can temporarily waive or modify regulatory TSD standards for certain treatment or storage units used during corrective action activities.⁴⁶⁵ The NCP does not expressly mention a similar concept, although the ARAR-waiver process would be a possible method to achieve the same results. But, ARAR waivers are limited and subject to state challenge.

⁴⁶³ See Proposed SWMU CA Rule, 55 Fed. Reg. 30798, 30852 (July 27, 1990).

⁴⁶⁴ *Id.*

⁴⁶⁵ Proposed SWMU CA Rule, 55 Fed. Reg. 30798, 30841 (July 27, 1990).

B. NCP's Site Response Process

The most significant portion of the new NCP relating to Superfund response actions is Subpart E. It describes the CERCLA site response process, which includes the following phases: (1) Site discovery;⁴⁶⁶ (2) removal site evaluation;⁴⁶⁷ (3) removal action;⁴⁶⁸ (4) remedial site evaluation;⁴⁶⁹ (5) evaluation of remedial priorities;⁴⁷⁰ (6) scoping;⁴⁷¹ (7) remedial investigation;⁴⁷² (8) feasibility study;⁴⁷³ (9) remedy selection;⁴⁷⁴ (11) remedial design, remedial action, and O&M;⁴⁷⁵ and (12) deletion from the NPL.⁴⁷⁶ EPA's goal, as a matter of policy, is to complete the remedy selection process (through record of decision signature) within 24 months of initiation of the site response process.⁴⁷⁷ The following is a discussion of certain portions of the CERCLA site response process for evaluative comparison to the SWMU corrective action response process.

⁴⁶⁶ NCP, 40 C.F.R. § 300.405 (1990).

⁴⁶⁷ NCP, 40 C.F.R. § 300.410 (1990).

⁴⁶⁸ NCP, 40 C.F.R. § 300.415 (1990).

⁴⁶⁹ NCP, 40 C.F.R. § 300.420 (1990).

⁴⁷⁰ NCP, 40 C.F.R. § 300.425 (1990).

⁴⁷¹ NCP, 40 C.F.R. § 300.430(b) (1990).

⁴⁷² NCP, 40 C.F.R. §§ 300.430(a)(2) and (d) (1990).

⁴⁷³ NCP, 40 C.F.R. §§ 300.430(a)(2) and (e) (1990).

⁴⁷⁴ NCP, 40 C.F.R. §§ 300.430(e)(9) and (f) (1990).

⁴⁷⁵ NCP, 40 C.F.R. § 300.435 (1990).

⁴⁷⁶ NCP, 40 C.F.R. § 300.425(e) (1990).

⁴⁷⁷ 1990 NCP Revision, 55 Fed. Reg. 8666, 8705 (March 8, 1990).

1. Site Discovery

Discovery of a release under CERCLA will usually depend on "external" reporting sources, such as private citizens or environmental organizations, or self-reporting by the facility or vessel owner/operator or employees.⁴⁷⁸ Removal actions will be taken if emergency conditions exist.

2. Remedial Site Evaluation

A remedial preliminary assessment (PA) and, if warranted by the PA, site inspection (SI) are conducted at all sites that are listed in the CERCLA Information System database to gather information for the hazard ranking evaluation.⁴⁷⁹ The purposes of the PA are: (1) To prioritize site inspections; (2) to determine whether removal action is necessary; and (3) to eliminate from further consideration for remedial action those releases that do not threaten public health or the environment; and (4) to gather appropriate existing data to assist in assigning a hazard ranking score for the site.⁴⁸⁰ EPA will apply its best professional judgment and conservative assumptions to address situations where limited site data is available but a potential threat exists. Sites, with preliminary HRS scores that exceed the threshold HRS score are either placed or proposed for placement on the NPL for further evaluation and possible remedial action.

⁴⁷⁸ CERCLA §§ 103(a) and (c) impose mandatory reporting and notification requirements for certain activities involved with hazardous substances. 42 U.S.C. §§ 9603(a) and (c) (1988). Section 304 of the Emergency Planning and Community Right-to-Know Act of 1986, added by SARA §§ 300-330 (codified at 42 U.S.C. §§ 11001-11050), also establishes self-reporting responsibilities on facilities that produce, use, or store "extremely hazardous substances." 42 U.S.C. § 11004 (1988); *see* 40 C.F.R. Parts 355 and 370 (1990).

⁴⁷⁹ NCP, 40 C.F.R. § 300.420(b) (1990).

⁴⁸⁰ NCP, 40 C.F.R. § 300.420(b)(1)(i)-(iv) (1990).

The PA involves a review of existing information concerning a release at a site, such as pathways of exposure, exposure targets, source of the release, and the nature of the release.⁴⁸¹ Off-site "reconnaissance" is required, and on-site inspections are allowed.⁴⁸²

Section 105(d) provides that any person who is or may be affected by a contaminant release may petition the President (or EPA or other federal agency to which the President's authority to conduct a PA has been delegated) to conduct a PA for the release.⁴⁸³ Upon receipt of such a petition, EPA (or federal agency with jurisdiction over the property where the release is alleged to have occurred) must conduct a PA within twelve months (unless a PA has previously been accomplished) or explain why a PA is inappropriate.⁴⁸⁴

If the PA indicates further site evaluation is necessary, EPA or the lead agency will conduct an SI. The SI provides additional information to that gathered during the PA. The SI consists of a visual inspection and sampling both on- and off-site.⁴⁸⁵ EPA or the lead agency prepares an SI report which includes a description of the waste handling at the site, known contaminants, pathways of migration of contaminants, human and environmental receptors, and a recommendation as to whether further action is warranted.⁴⁸⁶ The SI report is intended to expedite any necessary removal action or subsequent RI/FS.

⁴⁸¹ NCP, 40 C.F.R. § 300.420(a)(2) (1990).

⁴⁸² *Id.*

⁴⁸³ 42 U.S.C. § 9605(d) (1988); *see* NCP, 40 C.F.R. § 300.420(b)(5) (1990).

⁴⁸⁴ *Id.*

⁴⁸⁵ NCP, 40 C.F.R. § 300.425(c)(2) (1990).

⁴⁸⁶ NCP, 40 C.F.R. § 300.425(c)(5) (1990).

3. Scoping

Project scoping is intended to specifically define the appropriate type and extent of "investigative and analytical studies" that are needed for the site. During the scoping phase, the remedial investigation (RI) and feasibility studies (FS) are planned and the site is preliminarily characterized.⁴⁸⁷ The planners will determine how much and what type of data is needed for the RI/FS, and then they will develop studies to gather the necessary data, including any necessary treatability studies.⁴⁸⁸ The planners will identify likely response scenarios, potentially applicable technologies, and operable units.⁴⁸⁹ Also during the scoping phase, development of a community relations plan and identification of potential ARARs are initiated.⁴⁹⁰

⁴⁸⁷ NCP, 40 C.F.R. § 300.430(b) (1988).

⁴⁸⁸ *Id.*

⁴⁸⁹ *Id.* "Operable unit" is defined as a "discrete action that comprises an incremental step toward comprehensively addressing site problems." Operable units can be geographical subdivisions of a site, certain distinct site problems (such as one of several exposure pathways), or initial phases of a larger action. NCP, 40 C.F.R. § 300.5 (1990).

⁴⁹⁰ NCP, 40 C.F.R. §§ 300.430(b)(9) and (c) (1990). Prior to beginning field work for the RI, the lead agency conducts community interviews, prepares a formal community relations plan (CRP), and establishes a local information repository for public review and use. Prior to final publication and implementation of the CRP, public notice and comment are required. The lead agency must conduct meaningful and interactive community relations and communication to allow public involvement with the entire remedy selection process. NCP, 40 C.F.R. § 300.430(e); 1990 NCP Revision, 55 Fed. Reg. 8666, 8766-67 (March 8, 1990). The Proposed SWMU CA Rule does not mandate such extensive community relations or involvement. For example, the NCP requires a site specific information repository be made available in the local area near the site. This repository would duplicate the administrative record and documents kept at EPA's Regional Office. The Proposed SWMU CA Rule does not automatically require an information repository for every RCRA site. If the RCRA site is similar to sites listed on the NPL, then an information repository will usually be required. Even if required for a RCRA site, the documentation supporting EPA's remedy selection will not be required to be part of the information repository, whereas the NCP requires such documentation in the repository for CERCLA sites. Proposed SWMU CA Rule, 55 Fed. Reg. 30798 (July 27, 1990).

4. Remedial Investigation

For those sites listed or proposed for listing on the NPL, EPA or other lead agency (or the PRPs under the lead agency's direction) will conduct an RI concurrently with an FS. The purpose of the RI is to gather sufficient information to characterize the site conditions and assist in the selection of the appropriate remedial alternative.

The RI consists of: (1) Collection of data identified during the scoping phase as necessary for site characterization and remedial alternative evaluation; (2) a baseline risk assessment to determine whether remedial action is necessary; and (3) treatability studies, if necessary.⁴⁹¹

Data to be collected during the RI include: (1) Physical characteristics of site, such as surface features, soils, geology, hydrogeology, weather patterns, and ecology; (2) characteristics of air surface water, and ground water; (3) waste characteristics, such as quantity, state, concentration, toxicity, propensity to bioaccumulate, persistence, and mobility; (4) extent to which the source can be identified and characterized; (5) actual and potential exposure pathways through environmental media; (6) actual and potential exposure routes, such as inhalation or ingestion; and (7) other pertinent factors, such as proximity of sensitive populations.⁴⁹²

The site-specific baseline risk assessment consists of an exposure assessment component and a toxicity assessment component.⁴⁹³ The toxicity assessment considers the types of adverse health and environmental effects resulting from exposure to the chemical contaminant, the effects of various dose quantities, and the uncertainties associated with the particular chemical, such as the quality of evidence

⁴⁹¹ 1990 NCP Revision, 55 Fed. Reg. 8666, 8708 (March 8, 1990).

⁴⁹² NCP, 40 C.F.R. § 300.430(d)(2)(i)-(vii) (1990).

⁴⁹³ *Id.*

pertaining to a chemical's carcinogenicity in humans.⁴⁹⁴ The exposure assessment identifies the magnitude, frequency and duration, and routes of actual or potential human or environmental exposures. in the absence of any remedial action.⁴⁹⁵

The exposure evaluation involves developing "reasonable maximum estimates of exposure" for current and potential future land uses on and around the site.⁴⁹⁶ The three categories of human land use considered are residential, industrial/commercial, and recreational.⁴⁹⁷ EPA will also consider the ecological and agricultural uses of the property. To be protective, the exposure assessment process will consider future land use that is both reasonable, as derived from land use development patterns, and associated with the highest risk.⁴⁹⁸ Despite EPA's assumption that residential use is the likely future land use in most cases (thus warranting a higher level of protection), EPA promises to realistically assess exposure risk based EPA's evaluation of chemical concentrations, exposure frequency, and exposure duration.⁴⁹⁹

The exposure and toxicity assessments are combined to develop an overall risk characterization for the site and to help establish acceptable exposure levels for use in developing remedial alternatives in the FS.⁵⁰⁰ The chemical-specific toxicity data is compared against measured contaminant exposure levels and levels developed from model predictions to determine whether existing or potential levels at or near

⁴⁹⁴ Proposed NCP Revision, 53 Fed. Reg. 51394, 51425 (Dec. 21, 1988).

⁴⁹⁵ 1990 NCP Revision, 55 Fed. Reg. 8666, 8710 (March 8, 1990).

⁴⁹⁶ *Id.*

⁴⁹⁷ *Id.*

⁴⁹⁸ *Id.*

⁴⁹⁹ *Id.* EPA says it will average these factors and use a 95 percentile statistical distribution in its evaluative process.

⁵⁰⁰ 1990 NCP Revision, 55 Fed. Reg. 8666, 8708 (March 8, 1990).

the site are of potential concern.⁵⁰¹ If remedial action is deemed necessary, the baseline risk assessment helps identify the exposure pathways needing remediation and, preliminarily, what chemical concentrations associated with levels of risk will adequately protect public health and the environment (i.e., preliminary remediation goals).⁵⁰² ARARs and other standards are developed during the RI. However, identification of ARARs is not a primary purpose of the RI's baseline risk assessment because many ARARs are not directly risk related.⁵⁰³

5. Feasibility Study

During the feasibility study phase, viable remedial alternatives are identified and analyzed. This provides the decisionmaker with an assessment of the alternatives, highlighting their relative strengths and deficiencies and the trade-offs in selecting one alternative over another.⁵⁰⁴ Since the RI and FS phases are conducted concurrently, the RI may produce further site data and risk information that requires refining of the remediation goals and viable alternative remedial measures. Eventually, a reasonable range of viable alternatives is established. These alternatives are evaluated using nine criteria related to CERCLA's mandate, and a preferred remedy is then identified.

In identifying the alternatives, the lead agency first establishes protective remedial action objectives by refining the remedial action objectives developed during project scoping.⁵⁰⁵ Remedial action

⁵⁰¹ Proposed NCP Revision, 53 Fed. Reg. 51394, 51425 (Dec. 21, 1988).

⁵⁰² 1990 NCP Revision, 55 Fed. Reg. 8666, 8709 (March 8, 1990).

⁵⁰³ *Id.*

⁵⁰⁴ Proposed NCP Revision, 53 Fed. Reg. 51394, 51425 (Dec. 21, 1988).

⁵⁰⁵ 1990 NCP Revision, 55 Fed. Reg. 8666, 8712 (March 8, 1990).

objectives are general descriptions of what the remedial action is intended to accomplish.⁵⁰⁶ These objectives should be distinguished from "remediation goals" which are medium-specific or operable unit-specific chemical concentrations serving as the ultimate target level for site remediation.⁵⁰⁷ Remediation goals are considered a subset of remedial action objectives.⁵⁰⁸ The remedial action objectives should specify contaminants and media of concern, potential exposure pathways, and preliminary remediation goals for each exposure route.⁵⁰⁹

The preliminary remediation goals usually are developed during the scoping phase when limited site data was available. Most of the preliminary goals identified during scoping are based on readily available ARARs. Because of the interactive relationship between the RI and FS, as more site data and risk assessment information is developed during the RI, the preliminary remediation goals may need to be revised.⁵¹⁰ This is similar to RCRA's process for allowing revisions to corrective action "target levels" as more information is developed during the RCRA RFI.⁵¹¹

However, EPA has stated that in a situation involving only one contaminant and a chemical-specific ARAR exists for the contaminant, EPA will defer to the ARAR and set the ultimate remediation goal at that standard.⁵¹² If no ARAR exists or if an existing ARAR is nonprotective (due to cumulative risks from multiple contaminants or exposure pathways), EPA will develop a standard incorporating an ample

⁵⁰⁶ *Id.*

⁵⁰⁷ *Id.* at 8713.

⁵⁰⁸ *Id.*

⁵⁰⁹ *Id.* at 8712.

⁵¹⁰ *Id.* at 8712-13.

⁵¹¹ See Proposed SWMU CA Rule, 55 Fed. Reg. 30798, 30822 (July 27, 1990).

⁵¹² 1990 NCP Revision, 55 Fed. Reg. 8666, 8713 (March 8, 1990); see 40 C.F.R. § 300.430(f)(1)(i)(A) (1990).

margin of safety using EPA-developed toxicity information (cancer potency factors and reference dose method for noncarcinogenic effects).⁵¹³ For cumulative risks resulting from noncarcinogens, remediation goals will be set at levels for individual chemicals so that the cumulative effects of exposure to multiple chemicals will not result in adverse health effects.⁵¹⁴ For carcinogens with no adequate ARAR standard, EPA will use the risk range of 10^{-4} to 10^{-6} and a point of departure (or starting benchmark) of 10^{-6} .⁵¹⁵ This acceptable carcinogenic risk range is identical to that used in the RCRA corrective action process for developing media cleanup standards.

In the NCP, EPA developed a hybrid process to identify remediation goals for ground water contamination. CERCLA § 121(d) requires that CERCLA remedial action attain levels established under other environmental statutes, including the SDWA, if the levels are considered ARARs for CERCLA purposes.⁵¹⁶ Section 121(d) further specifies that SDWA maximum contaminant level goals (MCLGs) will be used as the cleanup standard if the MCLGs are relevant and appropriate under the circumstances of the release.⁵¹⁷ Under the SDWA, the enforceable standards/levels for SDWA purposes are maximum contaminant levels (MCLs), which represent the maximum allowable level of a

⁵¹³ 1990 NCP Revision, 55 Fed. Reg. 8666, 8713 (March 8, 1990).

⁵¹⁴ *Id.*

⁵¹⁵ NCP, 40 C.F.R. § 300.430(e)(2)(i)(A)(2) (1990). In its *proposed* NCP revision, EPA originally proposed using an acceptable risk range of 10^{-4} to 10^{-7} for carcinogens. Proposed NCP Revision, 53 Fed. Reg. 51394, 51426 (Dec. 21, 1988). However, due to strong arguments raised in public comments to the proposed NCP revision, EPA decided to lower the upper bound of the risk range. Persuasive arguments included inconsistency of using the proposed range in relation to the risk range used in other EPA programs; inconsistency with the statutory mandate for a remedy's cost-effectiveness; and technological impossibility of achieving the 10^{-7} level. See 1990 NCP Revision, 55 Fed. Reg. 8666, 8715-18 (March 8, 1990).

⁵¹⁶ 42 U.S.C. § 9621(d)(2)(A) (1988).

⁵¹⁷ *Id.*

contaminant delivered to any user of a public water system.⁵¹⁸ The SDWA also establishes MCLGs as nonenforceable health-based goals usually set at more stringent levels than MCLs due to their "no known or anticipated adverse effects on [human] health" and incorporation of an ample margin of safety.⁵¹⁹ Under this concept, the MCLG for many carcinogens is set at a zero amount of allowable concentration. MCLs are required to be set as close as feasible to its corresponding MCLG, after considering the best available technology, treatment techniques, and other factors, to include costs.⁵²⁰ EPA stated that because MCLs usually only apply to the quality of drinking water *at the tap* and not the quality of ground water, even though both may be interrelated, MCLs are not "applicable" requirements but, instead, are "relevant and appropriate" to ground water used or potentially usable for drinking water supply.⁵²¹ In the Proposed NCP Revision, EPA stated that MCLs and not MCLGs would generally serve as ARARs because MCLs are the enforceable standards under the SDWA.⁵²² However, in the final NCP revision, EPA modified its proposal by adopting MCLGs that are set above zero levels as ARARs for remediation goals.⁵²³ For MCLGs set at zero, EPA would substitute the MCLs as ARARs.⁵²⁴ In comparison, the SWMU corrective action program and Part 264 Subpart F program generally establish the *MCL or background level*, whichever is less stringent, as the media cleanup

⁵¹⁸ 42 U.S.C. 300f(3) (1988).

⁵¹⁹ 42 U.S.C. § 300g-1(b)(4) (1988).

⁵²⁰ 42 U.S.C. § 300g-1(b)(4) and (5) (1988).

⁵²¹ See 1990 NCP Revision, 55 Fed. Reg. 8666, 8750 (March 8, 1990).

⁵²² Proposed NCP Revision, 53 Fed. Reg. 51394, 51441-42 (Dec. 21, 1988).

⁵²³ 1990 NCP Revision, 55 Fed. Reg. 8666, 8752 (March 8, 1990); 40 C.F.R. § 300.430(e)(2)(i)(B) and (C) (1990).

⁵²⁴ *Id.* EPA reasoned that MCLGs set at zero levels would be difficult, if not impossible, to detect and measure, and implementation of remedies to achieve zero levels would be unachievable. 1990 NCP Revision, 55 Fed. Reg. 8666, 8752 (March 8, 1990).

standard for ground water contamination.⁵²⁵ The NCP, Proposed SWMU CA Rule, and Part 264 Subpart F programs allow use of alternate concentration limits (ACLs), but the process for determining whether to allow use of ACLs at certain CERCLA sites is more restrictive than the RCRA ACL process due to explicit statutory restrictions under CERCLA regarding use of ACLs.⁵²⁶

The remedial action objectives and goals help set parameters for evaluating potential technologies and developing remedial alternatives.⁵²⁷ Alternative remedial strategies that can attain the remedial action objectives and preliminary remediation goals are developed and screened. During the development and analysis of potential alternatives, their projected risks over time and during implementation are assessed based on the reasonable maximum exposure assumptions.⁵²⁸

The 1985 (old) version of the NCP required development of alternatives from the following categories: (1) Off-site alternatives; (2) alternatives that attain ARARs; (3) alternatives that exceed ARARs; and (5) a no-action alternative.⁵²⁹ Partly due to the new (1986) statutory emphasis on using permanent solutions and treatment technologies to the maximum extent practicable, EPA proposed a change in the range of alternatives that need be developed.⁵³⁰ EPA now requires, as a minimum, the development of the following categories of alternatives: (1) Alternatives principally relying on treatment to reduce toxicity, mobility, or volume of the hazardous substances at the site; (2) alternatives

⁵²⁵ Proposed SWMU CA Rule, 55 Fed. Reg. 30798, 30878 (July 27, 1990); 40 C.F.R. § 264.94(a) (1990).

⁵²⁶ 42 U.S.C. § 9621(d)(2)(B)(ii) (1988); *contra* Proposed NCP Revision, 53 Fed. Reg. 51394, 51433 (Dec. 21, 1988); *see supra* notes 219-20 and accompanying text on ACL process within Part 264 Subpart F program.

⁵²⁷ *Id.* at 8712.

⁵²⁸ *Id.*

⁵²⁹ NCP, 40 C.F.R. § 300.68(f) (1989).

⁵³⁰ Proposed NCP Revision, 53 Fed. Reg. 51394, 51427 (Dec. 21, 1988).

that involve little or no treatment but that control the threats posed by hazardous substances and/or prevent exposure (e.g., containment technologies and institutional controls); (3) for ground water response actions, alternatives that attain site-specific remediation levels within various restoration time periods using one or more different technologies; (4) alternatives using innovative treatment technologies if they offer potential for comparable or superior performance or implementability, fewer adverse impacts, or lower costs than other demonstrated approaches; and (5) a no-action alternative.⁵³¹

A screening process may be used to reduce the number of alternatives to be considered in detail if a wide array of alternatives are preliminarily developed.⁵³² The screening process, if used, involves three evaluative criteria: (1) long- and short-term effectiveness; (2) long- and short-term implementability; and (3) long- and short-term cost effectiveness.⁵³³ Effectiveness of alternatives refers to their overall performance in eliminating, reducing, or controlling current and potential risks, both during and after implementation.⁵³⁴ Implementability refers to the degree of difficulty in constructing the remedy and includes technical, administrative, and logistical difficulties that affect the time to implement the remedy.⁵³⁵ Cost considerations include construction costs and costs for operating and maintaining the remedy during the life of the remedy.⁵³⁶ The screening process is primarily intended to weed out any alternatives that are clearly ineffective, unimplementable, or inferior

⁵³¹ NCP, 40 C.F.R. 300.430(e)(3)-(6) (1990). For example, in a contaminated ground water scenario, the screening process will typically result in three to five alternatives surviving the initial screening process and carried through to the detailed analysis phase. EPA, Office of Solid Waste and Emergency Response (OSWER) Directive 9283.1-2, Guidance on Remedial Actions for Contaminated Water at Superfund Sites, 5-9 (Dec. 1988).

⁵³² NCP, 40 C.F.R. 300.430(e)(7) (1990).

⁵³³ NCP, 40 C.F.R. § 300.430(e)(7)(i)-(iii) (1990).

⁵³⁴ See Proposed NCP Revision, 53 Fed. Reg. 51394, 51427 (Dec. 21, 1988).

⁵³⁵ *Id.*

⁵³⁶ *Id.*

to other considered alternatives due to their effectiveness, implementability, or cost.⁵³⁷

In the preamble to the 1990 Revised NCP, it is important to note EPA's emphasis on a "bias for action" and "streamlined approach" during the RI, FS, and remedy selection phases. While explicitly recognizing its statutory responsibilities under CERCLA to prefer selection of remedial measures that employ treatment technologies and provide reliable, long term protection of public health and the environment,⁵³⁸ EPA strongly suggests a more flexible approach in developing, evaluating, and selecting remedial alternatives and the final remedy.⁵³⁹ EPA has codified several "expectations" and "management principles" to help *guide* (not mandate) its staff and PRPs through the remedial response process.⁵⁴⁰

One of EPA's "expectations" concerns the extent to which treatment is likely to be a practicable remedial measure for certain types of site problems. Based on EPA's experience with other Superfund sites, treatment of waste has been impracticable for situations such as sites with large volumes of low concentrations of materials or where the waste is very difficult to handle and treat (e.g., mixed waste of varying composition).⁵⁴¹ However, due to the statutory preference for treatment technologies as remedial measures, EPA also stated that it expects to require treatment, where practicable, and especially when the waste is highly mobile, liquid, or the contaminated area has high concentrations of toxic materials.⁵⁴² Expectations are not binding requirements.⁵⁴³ Their "guidance" is intended to help

⁵³⁷ *Id.*

⁵³⁸ See 1990 NCP Revision, 55 Fed. Reg. 8666, 8702 (March 8, 1990); 40 C.F.R. § 300.430(a)(i) (1990).

⁵³⁹ 1990 NCP Revision, 55 Fed. Reg. 8666, 8702-08 (March 8, 1990).

⁵⁴⁰ NCP, 40 C.F.R. § 300.430(a)(ii) and (iii) (1990).

⁵⁴¹ 1990 NCP Revision, 55 Fed. Reg. 8666, 8703 (March 8, 1990); 40 C.F.R. § 300.430(a)(iii)(B) (1990).

⁵⁴² 40 C.F.R. § 300.430(a)(iii)(A) (1990).

implementing officials and PRPs avoid duplicative and unnecessary efforts.⁵⁴⁴

EPA's "program management principles" generally consist of two concepts: (1) Use of operable units and interim remedial measures to accelerate actual site remediation (interim action concept); and (2) Tailoring the scope of site-specific data gathering, evaluation of alternatives, and documentation to the scope and complexity of the site problems (streamlining principle).⁵⁴⁵ Both are intended to enhance EPA's bias for remedial action.

Under the interim action concept, segmenting an overall site into operable units and addressing each of them with interim action can help simplify the task of remediating what appears to be a larger, more complex problem. By focusing on one of several exposure pathways or environmental media affected by site releases, the scope of developing and evaluating remedial alternatives decreases. The range of remedial alternatives needed for a feasibility study for an interim action need not be as extensive as that required for a larger, more comprehensive remedial plan.⁵⁴⁶ In fact, EPA stated that "[f]ew alternatives, *and in some cases perhaps only one*, should be developed for interim actions."⁵⁴⁷ An interim action approach allows initiation of remedial efforts on a limited, but effective, scale at a site as early as site data will allow. Interim action will allow early interdiction of some pollutant migration, thus minimizing the eventual efforts required by the final remedy. However, the major "catch" in the interim action concept is the requirement that interim actions and decisions cannot be inconsistent with nor preclude the eventual implementation of the final, or long term, remedy selected by EPA.⁵⁴⁸ This

⁵⁴³ 1990 NCP Revision, 55 Fed. Reg. 8666, 8702 (March 8, 1990).

⁵⁴⁴ *Id.*

⁵⁴⁵ NCP, 40 C.F.R. § 300.430(a)(1)(ii) (1990).

⁵⁴⁶ 1990 NCP Revision, 55 Fed. Reg. 8666, 8704 (March 8, 1990).

⁵⁴⁷ *Id.*

⁵⁴⁸ NCP, 40 C.F.R. § 300.430(a)(1)(ii)(B) (1990).

limitation, premised on statutory mandate, could jeopardize the interim action concept if PRPs are penalized for implementing an interim action measure that hinders the phasing in of other remedies which EPA believes are necessary to the overall site remedy. For example, a ground water extraction system implemented prior to source control action may restrict the type of source control that will be needed. The RCRA corrective action program uses a similar "operable unit" and phased remedy approach. The Proposed SWMU CA Rule echoes the same NCP warning that any phased remedy should be consistent with and not impede implementation of the final remedy.⁵⁴⁹

The streamlining principle encourages tailoring the response action efforts to the site-specific needs. In the preamble to the 1990 NCP Revision, EPA provided situations where a more streamlined analysis during the RI and FS phases would be appropriate:⁵⁵⁰

(1) Site problems are straightforward such that it would be inappropriate to develop a full range of alternative remedial measures. For example, a site characteristic, such as fractured bedrock, allows ground water contaminant migration into formations from which they cannot easily be removed, thus rendering total extraction impracticable or unfeasible.

(2) The need for immediate action to bring the site under interim control outweighs the need to explore all potentially appropriate alternative remedial measures.

(3) ARARs, TBCs, or program precedent indicate a limited range of appropriate alternative remedial measures.

(4) Numerous alternative remedial measures are obviously impracticable for a site due to severe implementability problems or prohibitive costs. For example, complete treatment of a large landfill would clearly be cost prohibitive.

CERCLA's FS is analogous to RCRA's corrective measures study (CMS). EPA's Proposed SWMU

⁵⁴⁹ Proposed SWMU CA Rule, 55 Fed. Reg. 30798, 30835-36 (July 27, 1990).

⁵⁵⁰ 1990 NCP Revision, 55 Fed. Reg. 8666, 8704 (March 8, 1990).

CA Rule also emphasizes a streamlined approach in evaluating and selecting alternative corrective remedies for the overall site cleanup by not requiring as extensive evaluations, as discussed earlier. This philosophy is premised on the reality that most RCRA facilities do not have as complex environmental problems (and as much public and political concerns) as Superfund sites. As a result of EPA's (and owner/operator's) enhanced flexibility at this crucial stage of the corrective action process, corrective action responses should be much quicker than CERCLA remediation.

6. Detailed Evaluation of Alternatives

After reviewing and eliminating the impracticable alternatives (based on ineffectiveness, grossly excessive costs, or difficulties in implementation) from the numerous potential alternatives,⁵⁵¹ EPA will conduct a detailed evaluation of the remaining viable options. These alternatives are evaluated under nine remedy selection factors that are divided into three categories of criteria.⁵⁵² The first category, *threshold criteria*, consists of two factors: (1) Overall protection of human health and environment; and (2) compliance with (or waiver eligibility for) ARARs. The second category, *balancing criteria*, consists of five factors: (1) Long-term effectiveness and permanence; (2) reduction of toxicity, mobility, or volume through treatment; (3) short-term effectiveness; (4) implementability; and (5) cost. The final category, *modifying criteria*, consists of two factors: (1) State acceptance; and (2) community acceptance.

Evaluation of alternative remedies against these categories of criteria is a phased screening process. Only those alternatives that initially satisfy the threshold criteria will undergo further evaluation with the balancing criteria.⁵⁵³ In the balancing criteria phase of the evaluation, EPA will utilize a benefit analysis of the five balancing factors, with preference to be accorded to a remedy's long-term effectiveness, permanence, and ability to reduce the contaminant's mobility, toxicity, or volume through treatment.⁵⁵⁴ After a *preferred* remedy has been identified using the balancing criteria, all of the evaluated alternatives and the preferred remedy are published for state and public comment. EPA will consider these comments to possibly modify the preferred remedy or reevaluate the alternatives, if appropriate.

⁵⁵¹ NCP, 40 C.F.R. § 300.430(e)(7) (1990).

⁵⁵² NCP, 40 C.F.R. § 300.430(e)(9) (1990).

⁵⁵³ 40 C.F.R. § 300.430(f)(1)(i) (1988).

⁵⁵⁴ *Id.*, at §§ 300.430(f)(1)(ii)(E).

The role of the cost criteria in the remedy evaluation process is of particular importance to the remediating party. Cost, as a balancing criteria, can only be considered after a remedy has been found to be protective and ARAR-compliant (the threshold criteria).⁵⁵⁵ After a range of protective and ARAR-compliant alternatives is identified, cost becomes a legitimate factor in choosing from among these alternatives.⁵⁵⁶ However, as mentioned earlier, two other balancing criteria are accorded preferential weight: (1) Permanency of remedy's effectiveness; and (2) whether the remedy uses, as its principal feature, treatment technologies to reduce contaminant toxicity, mobility, or volume.⁵⁵⁷

EPA clarified that cost is considered during two statutory determinations within the evaluative process: (1) Whether the selected remedy is cost effective; and (2) whether the selected remedy uses permanent solutions and treatment to the maximum extent *practicable*.⁵⁵⁸ Cost is considered in determining the selected remedy's cost-effectiveness by deciding which alternatives offer a "reasonable value for the money in light of the results they achieve."⁵⁵⁹ Cost differences must be compared against the alternatives' differences in long- and short-term effectiveness, permanence, and reduction in toxicity, mobility, or volume through treatment. Determining the "practicability" of long-term, permanent solutions and treatment technologies also requires consideration of the alternatives' differences in implementability and acceptance by the state and community.⁵⁶⁰

In comparison to the NCP, the SWMU corrective action remedy selection process requires the selected remedy to meet four threshold "standards" (versus two threshold standards under the NCP).

⁵⁵⁵ 1990 NCP Revision, 55 Fed. Reg. 8666, 8726 (March 8, 1990).

⁵⁵⁶ *Id.* at 8727.

⁵⁵⁷ *Id.* at 8729.

⁵⁵⁸ *Id.* at 8726.

⁵⁵⁹ *Id.* at 8729.

⁵⁶⁰ *Id.*

Quantitatively, this appears to be more rigorous than the NCP process. Substantively, this is not the case. EPA's interpretation of the four threshold "standards" used in the SWMU corrective action program allows more flexibility in its evaluative process than the NCP process. The difference in allowable flexibility can generally be attributed to two major reasons: (1) As acknowledged by EPA, most site circumstances addressable under RCRA corrective action are not as complex or large as Superfund sites; and (2) Congress has imposed statutory requirements in the CERCLA remedial action process that are not imposed on RCRA corrective actions.

Determination of whether a remedy is "protective of human health and environment" (the first standard for both RCRA and NCP processes) is more relaxed under RCRA's program. The Proposed SWMU CA Rule allows less stringent cleanup standards because ARAR-compliance is not a statutory requirement in RCRA. The Proposed SWMU CA Rule allows the radically new concept of conditional remedies to help industry prioritize its cleanup efforts. A conditional remedy concept would directly conflict with the Congressional mandate in CERCLA to select remedies that provide permanent solutions and incorporate treatment technologies to reduce contaminant toxicity, mobility, and volume.

The second standard in the *RCRA process* is attainment of media cleanup standards. As previously discussed, the process of selecting the MCSs is highly discretionary, depending on site-specific circumstances. In most ground water contamination scenarios, the MCS will either be the background level, MCLs, or ACLs, whichever is least stringent. Under the NCP standards, the remediation goal will more likely be MCLs and nonzero MCLGs, if available. Otherwise, a CERCLA-restricted ACL will be used. An ACL used in RCRA *may* be used as a CERCLA ACL, depending on whether the ACL meets CERCLA's restrictions on how the ACL was computed (again, another CERCLA statutory restriction).

The second and last remedy standard in the *NCP process* is compliance with ARARs. Although the NCP provides a procedure to obtain an ARAR compliance waiver, it is limited to six narrow

circumstances,⁵⁶¹ and waivers have not been granted often. Additionally, a proposed waiver of an ARAR based on state standards is subject to challenge by the state. The SWMU corrective action program has no formal requirement of compliance with ARARs.

The third standard in the *RCRA* remedy selection process is implementation of source controls to reduce or eliminate, to the extent practicable, further releases posing a threat to public health and the environment. In the Proposed SWMU CA Rule, EPA stated this "standard" should be *no more stringent than the NCP's threshold criteria*.⁵⁶²

The fourth standard in the *RCRA* process is compliance with applicable solid waste management standards. As discussed earlier, the Proposed SWMU CA Rule has several provisions that allow discretionary waivers of many procedural requirements. Similarly, CERCLA § 121(e)(1) relieves EPA, the lead agency, and PRPs from any permitting requirements for on-site CERCLA actions. To foster expeditious remedial actions under CERCLA, EPA has interpreted ARARs (and compliance with ARARs) to include only substantive, not procedural, requirements of other laws and regulations.⁵⁶³ However, many solid waste management standards are substantive, action- and location-specific, and, therefore, apply to the NCP response process as ARARs.

Comparison of the Proposed SWMU CA Rule's five remedy selection factors (to be distinguished from the four threshold standards) against the five balancing criteria in the NCP process reveals they are nearly identical. Although the EPA Regional Administrator appears to have more discretion under the

⁵⁶¹ CERCLA § 121(d)(4), codified at 42 U.S.C. § 9621(d)(4) (1988). The six circumstances are: (1) If the action is an interim measure and the ARAR will be met upon completion; (2) if fulfilling the ARAR would pose a greater risk than noncompliance; (3) if it is technically impracticable to satisfy the ARAR; (4) if an equivalent method would fulfill the performance standard of the ARAR; (5) if a state standard has not been consistently applied to other parties in the past; and (6) if compliance with the ARAR would not provide a "balance" between the protection achieved and other sites' demands on Superfund.

⁵⁶² Proposed SWMU CA Rule, 55 Fed. Reg. 30798, 30824 (July 27, 1990).

⁵⁶³ See 1990 NCP Revision, 55 Fed. Reg. 8666, 8756-8757 (March 8, 1990).

RCRA evaluation process, the amount of weight each process attributes to these factors seems to be substantially similar.

The Proposed SWMU CA Rule does not explicitly mention state and community acceptance (the two modifying criteria under the NCP process) as decisional factors. The Rule mentions these indirectly -- the Regional Administrator must "confer" with the state prior to its decision and must seek the traditional "public comment" by publishing a draft decisional document and the draft permit modification.⁵⁶⁴

The RCRA Corrective Measures Study phase of the remedy selection process emphasizes a streamlined approach in developing viable alternative remedies for final remedy selection. Relying on an assumption that the breadth (or number) of alternative remedies is proportional to the magnitude of the problem at the site, EPA categorizes the sites by the amount of risk and establishes an estimate of the number of alternative remedies that should be developed for the remedy selection evaluation.⁵⁶⁵ EPA stated that since RCRA sites do not require extensive evaluation of protective remedies as do most Superfund sites, EPA will not require the Corrective Measures Study and evaluation process to be as extensive as the NCP feasibility study and remedy evaluation process.⁵⁶⁶

⁵⁶⁴ Proposed SWMU CA Rule, 55 Fed. Reg. 30798, 30835 (July 27, 1990).

⁵⁶⁵ *Id.* at 30821.

⁵⁶⁶ *Id.*

7. Remedy Selection

If the cleanup project involves EPA as the lead agency, EPA prepares the ROD and must offer the state *an opportunity to concur* with the recommended remedy.⁵⁶⁷ If the state does not concur, EPA may still select the remedy as was originally recommended or with state-suggested "enhancements".⁵⁶⁸ If EPA determines the state-suggested modifications are necessary and appropriate to the selected remedy, the remedy will be revised and any additional costs will be paid as part of the remedial action.⁵⁶⁹ If unnecessary state-suggested changes would not conflict or be inconsistent with the recommended remedy, EPA can agree to integrate the changes, but only if the state agrees to fund and serve as lead agency for the revised component of the project.⁵⁷⁰

The state may serve as the lead agency for cleanup projects financed by Superfund at sites that do not fall under the jurisdiction of a federal agency if the state is designated as lead agency in a Superfund Memorandum of Agreement (SMOA) between the state and EPA.⁵⁷¹ The state may prepare the ROD if a site-specific agreement between EPA and the state specifies that the state has EPA's authorization to perform as the lead agency for ROD preparation.⁵⁷² In these situations, the state must obtain EPA's adoption and approval of the recommended remedy and ROD prior to proceeding with a Superfund-

⁵⁶⁷ 40 C.F.R. § 300.515(e)(2)(i) (1990).

⁵⁶⁸ NCP, 40 C.F.R. §§ 300.515(e)(2)(ii) and (f) (1990).

⁵⁶⁹ NCP, 40 C.F.R. § 300.515(f)(i) (1990).

⁵⁷⁰ NCP, 40 C.F.R. § 300.515(f)(ii) (1990).

⁵⁷¹ NCP, 40 C.F.R. §§ 300.5 and 300.505(d)(1) (1990).

⁵⁷² The SMOA cannot be used to for site-specific decisions regarding which agency will prepare the ROD for the site. NCP, 40 C.F.R. § 300.515(e)(2) (1990); *see* 1990 NCP Revision, 55 Fed. Reg. 8666, 8783 (March 8, 1990).

financed response action.⁵⁷³ If the state cannot obtain EPA's approval of the state's recommended remedy, the only recourse for the state is to: (1) Revise the recommended remedy to gain EPA's approval; (2) transfer lead responsibility to EPA or other qualified federal agency who will revise the recommended remedy; or (3) withhold state assurances required under CERCLA § 104(c)(3), thus precluding EPA from instituting remedial action at the site.⁵⁷⁴ As the lead agency, the state has considerably more influence over the entire remedy selection process by conducting the RI/FS, drafting the proposed plan, and drafting the proposed ROD, assuming a site-specific agreement so specified. Even if EPA or another federal agency is the lead agency, the state may still have considerable clout because it can challenge any proposed waiver of ARARs for the remedial action.⁵⁷⁵

After the state, EPA, and any other affected federal agency confer and identify a preferred alternative, the proposed remedy is published for public review and comment.⁵⁷⁶ After the lead agency reviews the public comments, it will conduct any necessary consultations with the state and other affected federal agencies to determine whether, in light of the public comments, the preferred alternative is still the most appropriate selection.⁵⁷⁷ EPA or the federal lead agency will then document the final

⁵⁷³ NCP, 40 C.F.R. § 300.515(e)(2)(ii) (1990). If the state cannot obtain EPA's approval for its preferred remedy, the state can proceed with remedial response actions but without Superfund financing. The state would have to use its own funds or enforcement authorities. This state action would be subject to CERCLA's preemption authority under CERCLA § 122(e)(6), which precludes any nonauthorized remedial action at a site where the U.S. or a PRP (pursuant to an EPA administrative order or consent decree) has initiated an RI/FS. 42 U.S.C. § 9622(e)(6) (1988).

⁵⁷⁴ 42 U.S.C. § 9604(c)(3) (1988); *see* 1990 NCP Revision, 55 Fed. Reg. 8666, 8783 (March 8, 1990).

⁵⁷⁵ *See* CERCLA §§ 121(e)(2) and (f)(2)(B), codified at 42 U.S.C. §§ 9621(e)(2) and (f)(2)(B) (1988).

⁵⁷⁶ NCP, 40 C.F.R. § 300.430(f)(5) (1990).

⁵⁷⁷ *Id.*

selection in the ROD.⁵⁷⁸

⁵⁷⁸ *Id.*

8. Deletion from the NPL

After the selected CERCLA remedy has been implemented and is operating at a Superfund-financed site, the state assumes O&M responsibility for the expected life of the remedial action.⁵⁷⁹ An important exception to this general rule involves treatment or other measures necessary to restore ground or surface water quality -- these measures would be construed as remedial action and not O&M until protective levels are achieved or ten years elapse, whichever occurs first.⁵⁸⁰ EPA has narrowed this exception by interpreting any source control measures or efforts to provide alternate drinking water supplies as not being necessary for water quality restoration. Such measures are O&M activities to be borne by the state.⁵⁸¹

After CERCLA response actions are no longer necessary (even though O&M activities may still be needed), EPA can propose the site for deletion from or recategorization on the NPL.⁵⁸² Where hazardous substances are left in place on the site as part of the remedy, EPA's policy will be to not delete the site from the NPL until EPA has performed at least one review five years after initiation of remedial action.⁵⁸³ Even if a site is deleted from the NPL, EPA has authority to initiate further remedial action at the site under appropriate circumstances without reevaluating it under the HRS.⁵⁸⁴ The obligation to conduct further remedial actions may theoretically never be severed.

To complete the RCRA corrective action process, the owner/operator must demonstrate compliance

⁵⁷⁹ NCP, 40 C.F.R. § 300.510(c)(1) (1988).

⁵⁸⁰ 42 U.S.C. § 9604(c)(6) (1988).

⁵⁸¹ 40 C.F.R. § 300.435(f)(4) (1990).

⁵⁸² 40 C.F.R. § 300.425 (1990).

⁵⁸³ See 1990 NCP Revision, 55 Fed. Reg. 8666, 8699-8700 (March 8, 1990).

⁵⁸⁴ 42 U.S.C. §§ 9605(e) and 9621(c) (1988); NCP, 40 C.F.R. § 300.425(e)(3) (1990).

with all assigned MCSs, ensure source control requirements are satisfied, and remove or decontaminate any remediation equipment or units pursuant to the permit. Before the facility receives a "clean bill of health", all SWMUs on the facility must have met the above conditions. Partial completion certifications are possible in situations involving releases into different media where remediation for one of the media releases has been completed.

VII. EPA's Deferral Policy

A CERCLA site can undergo Superfund-financed remedial efforts only if it is listed on the NPL. As a matter of policy, EPA generally will include on the NPL only those sites that appear to warrant remedial action under CERCLA, as evidenced by their HRS scores, and that cannot be addressed under other regulatory authorities. Due to the costly expense of remediating Superfund sites, finite amount of available funds and human resources, and rapidly expanding number of Superfund sites, EPA felt it had to conserve their response and enforcement efforts under CERCLA to a limited number of NPL sites. To help conserve Superfund monies and efforts for those sites where cleanup cannot be achieved by other means, EPA developed a policy to defer listing of several HRS-qualified sites that were addressable under other specific federal programs which EPA believed were capable of remedying the sites' problems. However, EPA has limited this deferral policy to specific federal authorities, of which RCRA is perhaps the most significant, and to specific categories of sites under those authorities.

A. The "Other" Authorities

EPA asserts that the legal basis for its authority to defer the listing of NPL-qualified sites to those authorities stems from CERCLA § 105(a)(8).⁵⁸⁵ CERCLA § 105(a)(8)(B) requires EPA to list priority sites from among the known releases or threatened releases of hazardous substances, pollutants, or contaminants. CERCLA § 105(a)(8)(A) directs EPA to consider certain enumerated and "other appropriate" factors in its listing process.⁵⁸⁶ EPA interprets the "other appropriate" language of CERCLA § 105(a)(8)(B) provides EPA with *discretionary* authority to list sites for the NPL.⁵⁸⁷

EPA acknowledges that its discretionary authority to defer listings has to be judiciously applied. EPA's CERCLA policy is "to pursue cleanup of NPL sites using the appropriate response and/or enforcement actions available to the Agency, including authorities other than CERCLA (e.g., RCRA)."⁵⁸⁸ The two federal regulatory programs, other than CERCLA, to which EPA has thus far entrusted the remediation of potential Superfund sites are RCRA corrective action and the Nuclear Regulatory Commission's authority under The Atomic Energy Act and Uranium Mill Tailings Radiation Control Act of 1978 to address releases of source, by-product, and special nuclear material from an NRC-licensed facility.⁵⁸⁹ In its 1988 Proposed NCP Revision, EPA proposed expanding the deferral policy to other federal and state regulatory authorities, such as any future RCRA Subtitle D corrective program for new and existing Subtitle D landfills, Surface Mining Control and Reclamation Act of 1977 for mining wastes, Federal Insecticide Fungicide and Rodenticide Act for contamination resulting from

⁵⁸⁵ NPL for RCRA Sites Rule, 54 Fed. Reg. 41000, at 41004 (Oct. 4, 1989).

⁵⁸⁶ 42 U.S.C. 9605(a)(8) (1988).

⁵⁸⁷ NPL for RCRA Sites Rule, 54 Fed. Reg. 41000, 41004 (Oct. 4, 1989).

⁵⁸⁸ See NPL for RCRA Sites Rule, 54 Fed. Reg. 41000, 41002 (October 4, 1989).

⁵⁸⁹ NPL for Uncontrolled Hazardous Waste Sites, 56 Fed. Reg. 5598 (Feb. 11, 1991).

registered use of pesticides.⁵⁹⁰ EPA is still reviewing public and Congressional concerns over the proposed expanded policy.⁵⁹¹

⁵⁹⁰ Proposed NCP Revision, 53 Fed. Reg. 51394, 51417 (Dec. 21, 1988).

⁵⁹¹ NPL for Uncontrolled Hazardous Waste Sites, 56 Fed. Reg. 5598 (Feb. 11, 1991).

B. Federal Facility Exclusion

EPA has interpreted another major limitation on its authority to defer listings. EPA will continue to list NPL-qualified *federal* facilities, despite their amenability to RCRA Subtitle C corrective action. If a federal facility, such as a military installation, qualifies for listing on the NPL but also is subject to RCRA Subtitle C corrective action, EPA will continue to list the facility on the NPL. Interpreting CERCLA § 120 to limit its discretionary authority to defer listing federal facility sites on the NPL, EPA justified this exclusion from the deferral policy based on the four following reasons: (1) The money/resource conservation rationale underlying the deferral policy is inapplicable to deferrals of federal facility sites;⁵⁹² (2) because the original purpose of publishing the NPL was to inform the public of

⁵⁹² CERCLA § 111(e)(3), codified at 42 U.S.C. § 9611(e)(3) (1988), prohibits use of Superfund monies for remedial action at federal facility sites, except for the limited activities specified in CERCLA § 111(c). SARA § 121, codified at 10 U.S.C.A. §§ 2701-07, 2721, and 2810 (West Supp. 1991), established a separate cleanup program for Department of Defense (DOD) sites, referred to as the "Defense Environmental Restoration Program" (DERP). Pub. L. 99-499, Title II, § 211(a)(1)(B), 100 Stat. 1724 (1986). DERP, which is administered by the Secretary of Defense, consists of a separate cleanup fund, the "Defense Environmental Restoration Account" (DERA), to finance restoration activities at DOD sites. 10 U.S.C.A. § 2703 (West Supp. 1991). DERA is a DOD-administered fund. CERCLA § 120(a) still requires federally owned facilities to be subject to and comply with CERCLA (and the NCP) to the same extent as non-federal entities. CERCLA § 120(a)(4) even goes further and requires that cleanup activities at non-NPL federal site cleanup activities must comply with state laws concerning response actions.

In 1988, 91 military installations were selected for closure and partial closure. Closures were to be conducted between January 1990 and end-October 1995. Five of these were NPL-sites. As part of the closure process, environmental restoration of the installations was primarily funded from DERA until Congress established a separate Base Closure Account, appropriated with \$100,000,000, under the National Defense Authorization Act for Fiscal Year 1991, Pub. L. 101-510, 104 Stat. 1598 (1991). The Base Closure Account provided a separate fund of \$100,000,000 for restoration activities at military installations selected to close under the 1988 Base Closure Act, Pub. L. 100-526, § 207, 102 Stat. 2623 (1988). Congress desired to avoid conflicts in DOD's prioritization of funding restoration activities at closing installations and nonclosing, active installations. Of the 36 installations recommended for closure on the 1991 Base Closure and Realignment Commission's closure list, six are on the NPL. As an incentive for DOD to expedite the environmental restoration of closing installations on the 1988 list, Congress allowed DOD to funnel any proceeds from the sale or disposal of the closed installations to the Base Closure Account so long as the transfer or disposal occurs by October 1995. 10 U.S.C.A. § 2687 (West Supp. 1991). Otherwise, the proceeds will go to the U.S. General Treasury, beyond DOD's control and authority to earmark such funds for further restoration at other closing installations.

the status of federal government cleanup efforts under CERCLA, the deferral of listing of the majority of Superfund sites would run contrary to one of original purposes of implementing the NPL; and (3) listing federal sites on the NPL will help those federal agencies to prioritize their cleanup efforts on sites that present the most serious problems; and (4) because most federal NPL-qualified facility sites have RCRA units, deferral of their listing would result in few federal NPL sites⁵⁹³ and this would be contrary to CERCLA § 120.⁵⁹⁴ CERCLA § 120(a) requires federal agencies with NPL-qualified sites to be subject to the same requirements, including inclusion on the NPL, that are imposed on private industries with NPL sites.⁵⁹⁵ From this, EPA construed that Congress intended the "criteria to list federal facility sites should not be more exclusionary than the criteria to list non-Federal sites on the NPL."⁵⁹⁶ From a critical viewpoint, all but one of EPA's justification for excluding federal facility

A significant constraint imposed on DOD under CERCLA is that DOD must provide a covenant in the deed certifying completion of remediation of any contamination necessary to protect public health and the environment and promising that the U.S. will perform any additional remedial measures for any subsequent discovery of public health and environmental threats attributable to the U.S. Government. 42 U.S.C. § 9620(h)(3) (1988). States with closing installations desire expeditious restoration and conversion of these properties. Conversion of these properties, many located in prime locations, to state and private use will help maintain or increase employment opportunities, attract new investment, and generally help maintain or increase the states' tax-revenue base. These DOD and state incentives for expeditious restoration of closing installations create ideal conditions for close alliance between DOD and the state. If the state is the oversight authority for restoration under its EPA-authorized RCRA program or CERCLA-equivalent program, DOD can expect prompt, streamlined cooperation from the oversight agency. However, for closing NPL-qualified installations, EPA's exclusion of federal facilities from the policy will result in EPA CERCLA oversight while DOD maintains its lead-agency role under Executive Order 12580. An already overwhelmed EPA Regional Office trying to focus on Superfund-financed cleanup efforts at more serious non-federal site problems may not be as motivated as the state to expeditiously review DOD's restoration plans and efforts at a closing NPL-qualified installation, thus resulting in increased transactions costs and time to perform the necessary restoration.

⁵⁹³ The most recently promulgated NPL contained a total of 1,189 sites, of which 116 (or nearly 10%) were federal facility sites. NPL Final Rule, 56 Fed. Reg. 5598 (Feb. 11, 1991).

⁵⁹⁴ Listing Policy for Federal Facilities, 54 Fed. Reg. 10520, 10525 (March 13, 1989); *see* Proposed Listing Policy for Federal Facilities, 52 Fed. Reg. 17991 (May 13, 1987).

⁵⁹⁵ 42 U.S.C. § 9620(a)(2) (1988).

⁵⁹⁶ *Id.*

sites from the deferral policy would appear to equally apply to non-federal sites. EPA's rationale that not listing federal sites on the NPL would mislead the public as to the progress of federal cleanup efforts appears to be post hoc reasoning. If Raytheon, Union Carbide, or another major private firm had a significant number of NPL sites, would EPA exclude Du Pont's or Union Carbide's sites from the deferral policy? If the NPL is touted as a method to inform the public about the status of cleanup efforts at serious waste sites, excluding hazardous sites attributable to private industry from the NPL does not promote the purpose of the NPL. The best justification offered by EPA for excluding federal sites from the deferral policy is that excluding federal facilities from the policy does not further the fund/resource conservation intent underlying the policy.

However, the consequences of listing federal sites on the NPL rather than defer to RCRA may actually increase the federal agencies' time and costs to clean up RCRA/Superfund dual-qualified sites.⁵⁹⁷ In addition to the potentially more stringent and costly CERCLA/NCP cleanup requirements, federal agencies face the prospect of having to also comply with parallel state RCRA corrective action requirements as a result of the federal court decision in *State of Colorado v. United States Department of the Army*.⁵⁹⁸ That case, commonly referred to as Rocky Mountain Arsenal, upheld Colorado's parallel application of its RCRA requirements, including its state permitting requirement, at an active federal CERCLA cleanup at the site.⁵⁹⁹ The Department of Defense, who has a majority of the federal NPL-qualified sites, has blamed much of the slow progress of its cleanup efforts at its RCRA/CERCLA dual-qualified sites on the confusion caused by duplicative oversight authority between states and EPA and the poor integration of the states' RCRA and EPA's Superfund

⁵⁹⁷ See, e.g., *supra* note 592 and text within.

⁵⁹⁸ 707 F.Supp. 1562 (D.Colo. 1989) (hereafter "Rocky Mountain Arsenal").

⁵⁹⁹ *Id.* at 1572.

requirements.⁶⁰⁰

⁶⁰⁰ See, e.g., GAO, Report on Hazardous Waste: EPA Cleanup Requirements -- DOD Versus Private Entities, 4, 14, & App. III (July 1989).

C. Exclusion of Other Categories of RCRA Sites

Only certain categories of *non-federal* sites that are NPL-qualified and within RCRA corrective action authorities are not deferred from listing on the NPL. The categories include: (1) Facilities owned by persons who demonstrate an inability to finance a cleanup (i.e., filing for bankruptcy);⁶⁰¹ (2) facilities that lose authorization to operate and the owner/operator demonstrates an unwillingness to undertake corrective action;⁶⁰² (3) facilities that have not lost authorization to operate and has a history of unwillingness to comply with RCRA Subtitle C requirements;⁶⁰³ (4) non-filers or late filers of Part A of RCRA permit applications;⁶⁰⁴ (5) converters, which are those facilities that at one time treated or stored RCRA hazardous waste but have since converted to a generator-only status, such as less-than-90-day storage only;⁶⁰⁵ (6) protective filers, or those who, as a precaution, file the Part A of a RCRA permit application even though their operations have not met the definition of TSD facilities;⁶⁰⁶ and (7) sites holding RCRA TSD permits issued prior to the enactment of HSWA in 1984.⁶⁰⁷ The first four categories reflect facilities that are perceived as risks who will not perform corrective action under RCRA Subtitle C. For non-filers or late filers of Part A of their permit applications, EPA stated that exclusion from the deferral policy will not necessarily be a foregiven conclusion. EPA will evaluate the non-filers' and late filers' history of compliance with Subtitle C

⁶⁰¹ 51 Fed. Reg. 21057 (June 10, 1986).

⁶⁰² *Id.*

⁶⁰³ *Id.*

⁶⁰⁴ 53 Fed. Reg. 23978 (June 24, 1988).

⁶⁰⁵ *Id.*

⁶⁰⁶ *Id.*

⁶⁰⁷ *Id.*

requirements on a case specific basis.⁶⁰⁸ EPA will list converters, despite applicability of Subtitle C corrective action requirements for former TSD facilities, for priority assessment reasons. EPA reasons that listing will help spur a converter to clean up site problems caused by past TSD activities. However, if a converter will consent to compliance with prompt RCRA corrective action, EPA will defer the listing.⁶⁰⁹ The last two categories, protective filers and holders of pre-1984 TSD permits, will be listed because of doubts of whether they must comply with RCRA Subtitle C corrective action. Holders of pre-1984 permits are not subject to corrective action under RCRA § 3004(u) because that provision only applies to permits issued after HSWA enactment.⁶¹⁰ They are not subject to RCRA § 3008(h) because they are not operating under interim status. A protective filer of a permit application indicates, by the protective filing, that he/she is not certain whether TSD activities will occur on the facility.

For those NPL-qualified RCRA sites deferred from listing but which fail to take the necessary RCRA corrective action, CERCLA may still provide the necessary response authorities.⁶¹¹ If EPA defers the listing of a site, it does not preclude use of CERCLA § 104 response and § 106 enforcement provisions.⁶¹² If EPA determines after deferral that these sites are not being properly managed under the other authorities such as RCRA, EPA may decide to place the sites on the NPL.⁶¹³

⁶⁰⁸ NPL for RCRA Sites Rule, 54 Fed. Reg. 41000, 41009-10 (Oct. 4, 1989).

⁶⁰⁹ *Id.* at 41010-11.

⁶¹⁰ *Id.* at 41011.

⁶¹¹ *Id.* at 41004.

⁶¹² *Id.* at 41002.

⁶¹³ *Id.*

D. Opposition to the Policy

Keeping in mind that public comment to the NPL for RCRA Sites Rule was received by EPA prior to promulgation of the 1990 NCP Revision and 1990 SWMU CA Rule, criticism of the deferral policy interestingly touched upon the comparisons between CERCLA/Superfund and RCRA Subtitle C corrective action. Generally, pro-environmental opponents of the policy disliked the notion that NPL-qualified sites would not be listed and, thus, not subject to Superfund-financed remediation. Overall, they perceived RCRA Subtitle C corrective action as more lenient and less effective in achieving an adequate cleanup. Several critics who were pro-industry desired to have more categories of RCRA sites deferred from listing because they perceived the Superfund program requirements as more stringent than RCRA corrective action. Some pro-industry critics of the policy argued against the deferral because they did not believe it was equitable to place the burden of cleanup only on the owner/operator.⁶¹⁴

⁶¹⁴ *Id.* at 41006-41012.

E. EPA's Response to Criticisms

In response to the criticisms, EPA emphasized that one of the primary goals of the RCRA corrective action programs is to achieve substantial consistency with CERCLA's substantive requirements. For those issues where CERCLA provided more response authorities or advantages to certain classes of persons who might be disadvantaged by deferral, EPA stressed the flexibility and discretion of using the CERCLA authorities, even though the site was not listed.⁶¹⁵

A general criticism was that RCRA did not provide EPA the authorities granted by CERCLA to compel cleanups by responsible parties. Critics pointed to a lack of cost recovery authorities at RCRA sites and the lack of joint and several liability authorities under RCRA, all of which would hamper RCRA cleanup at multiparty sites with a recalcitrant party. EPA answered that "the only authority unavailable at a deferred RCRA facility is use of the (Superfund) for remedial action."⁶¹⁶ EPA listed the various authorities under RCRA and emphasized that EPA retained the authority to: (1) Take joint RCRA/CERCLA actions where appropriate to make multiparty solutions work; (2) use its CERCLA §§ 104 and 106 authorities where appropriate; and (3) subsequently list the site on the NPL if all else fails or if the RCRA site falls within one of the deferral policy exclusions.⁶¹⁷

⁶¹⁵ *Id.*

⁶¹⁶ *Id.* at 41007.

⁶¹⁷ *Id.*

VIII. Conclusion

A considerable amount of flexibility has been incorporated in the regulatory blueprints for CERCLA and RCRA remedial action. Despite the inherent tensions resulting from the competing goals in CERCLA and despite the statutory restrictions limiting EPA's discretion on how to address site problems under CERCLA, it is evident in the NCP that EPA tried to justify and preserve as much agency flexibility as possible for CERCLA remedial action program. Two overriding factors preclude the revised NCP from achieving flexible parity with the Proposed SWMU CA Rule: (1) Congressional mandates for ARAR-compliance and promotion of treatment technologies in CERCLA remedies; and (2) the magnitude and complexity of problems normally encountered at Superfund sites in comparison to typical RCRA sites.

Given EPA's assurances that it will implement the corrective action program to achieve "substantial consistency" with CERCLA, how effectively it can carry out that promise will affect public opinion of the effectiveness and fairness of either program.

EPA's Deferral Policy is a viable management concept to conserve Superfund resources. RCRA Subtitle C, with the expansion of its corrective action authorities to address facility-wide contaminant problems, is the best-suited non-CERCLA authority to substitute for EPA's Superfund authority. EPA's exclusion of certain categories of sites from the policy, except the exclusion for federal sites, is well-reasoned. With the mounting public and Congressional criticism against EPA for the slow progress in remedying sites under Superfund, EPA should seize the opportunity to expedite cleanup efforts at closing DOD installations by deferring oversight of their remedial efforts to states with authorized RCRA Subtitle C corrective action programs. The fostering of alliances between DOD and the states in this limited context will help establish a DOD-state working relationship that can address cleanup efforts at the

remaining federal sites. This, in turn, will allow EPA to focus Superfund resources at non-federal NPL sites. For non-federal sites subject to the deferral policy, EPA can help alleviate any perceived inequities between CERCLA and RCRA by actually using its CERCLA authorities, as necessary, at RCRA sites that were deferred from NPL listing. EPA has created sufficient flexibility in both the NCP and Proposed SWMU CA Rule to bring the programs closer together. This integration will minimize criticism of the deferral policy and help ensure the overall objective of timely, protective site cleanups.

The following is a summary of the comparisons between the CERCLA remedial action and RCRA corrective programs:

1. The nature of the programs and types of sites addressed under each program affect how the programs are implemented. CERCLA was intended to address abandoned sites that usually were contaminated with various pollutants over an extended period of time. It was a reactive statute that incorporated mechanisms, such as Superfund-financing, lack of preenforcement judicial review, and extensive liability provisions, to foster remediation of those sites.

Conversely, RCRA originally was preventive in that Subtitle C established stringent requirements on how to handle hazardous wastes to prevent future Superfund sites. Upon realization that this "good practices" approach still allowed the potential of a significant number of future Superfund sites, Congress added a new dimension to Subtitle C -- extensive authority to order corrective action for hazardous releases from all solid waste units at RCRA facilities that treated, stored, or disposed hazardous wastes, no matter how long ago the waste units were operational. The key was to place the cleanup burden on current owners/operators who could pass the costs to consumers of their products or services.

Superfund efforts were limited by available Superfund resources and hampered by the difficulties in identifying who should clean up what amount from among a multitude of potentially responsible parties. The transaction costs and loss of time incurred under CERCLA due to PRP identification and negotiations do not normally surface at RCRA sites. CERCLA focused on releases of *hazardous substances*, which

greatly outnumber the *hazardous wastes* regulated by RCRA Subtitle C. The new corrective action program only addresses releases of hazardous constituents and wastes resulting from systematic and routine activity, and not a one-time accidental spill. CERCLA provides authority to respond to an accidental spill. The more releases and contaminants that were subject to regulation under CERCLA, the more likely multi-contaminants and multi-media pathways of exposure were involved. The early RCRA corrective action program under Part 264 Subpart F only addressed contaminant releases to ground water.

Until the 1984 HSWA Amendments, there was a substantial gap between the two programs. Even with the addition of the 1984 HSWA corrective action authorities, many of the preexisting fundamental differences remained. But the new corrective action program complemented CERCLA's program enough to create significant overlaps between the two programs. Because the hazardous substance universe under CERCLA encompassed the hazardous wastes in RCRA, and the PRPs in CERCLA encompassed TSD facility owners/operators, the corrective action program needed only to expand its scope to address releases to other media from inactive or active waste management units to create the overlap. Sections 3004(u), (v), and 3008(h) did precisely that. With the existence of this overlap between the two programs, more attention has been focused on EPA's approach in how it will implement the programs through the NCP and SWMU CA Rule.

2. The methods of deriving cleanup goals under both programs differ, despite EPA's proclamation that the cleanup goals should be substantively equivalent. The RCRA corrective action program primarily relies on MCLs, background levels, and ACLs, whichever is less stringent, to establish the cleanup goals. ACLs developed under the RCRA process avoid the limitations CERCLA imposes on EPA in determining ACLs for CERCLA purposes.

The NCP specifies that as a general rule, pursuant to Congressional mandate, ARARs serve as the cleanup goals at Superfund sites. However, in the NCP, EPA has hedged away from rigid adherence to

this presumption. EPA will consider site-specific circumstances to determine which ARARs apply, whether ARAR waivers should be granted, and whether remediation to background levels less stringent than ARARs should be allowed. Grounds for authorizing ARAR-waivers have expanded. But, for ground water contamination scenarios involving only a single contaminant and a chemical-specific ARAR exists, EPA will defer to the ARAR as the cleanup goal. EPA developed an interesting hybrid method to establish cleanup goals when MCLs/MCLGs under the SDWA are available for a given contaminant. The NCP allows use of MCLs when the MCLGs for the contaminant are set at zero. When the MCLGs are non-zero, EPA will defer to the MCLGs. Both programs agree on a similar risk range of 1×10^{-4} to 1×10^{-6} , with a point of departure at the 10^{-6} level, for carcinogenic contaminants with no established protective standards under other federal programs.

The methods under both programs for establishing preliminary cleanup goals early in the response process is similar. Both rely on further-developed site information as a means to revise these goals on a site-specific basis. Under CERCLA, the starting point for establishing the preliminary cleanup goals are ARARs. Under the RCRA corrective action program, no definitive guidelines were provided regarding how the preliminary target levels would be developed. EPA stated that an estimated cleanup range of 1×10^{-4} to 1×10^{-6} might be an appropriate target estimate.

The RCRA corrective action program uses a "trigger level" concept to indicate a need for developing and evaluating further site information and alternative remedies. The Part 264 Subpart S corrective action program relies on chemical-specific ARARs to establish its "action levels." But, the Proposed SWMU CA Rule, heavily relying on background levels that less stringent than chemical-specific ARARS, emphasizes that the EPA Regional Administrator has the discretion to not require a corrective measures study even if action levels are exceeded. The Part 264 Subpart F ground water monitoring and corrective action program for regulated units relies on ground water protection standards (based on MCLs) or significant statistical differences in ground water contaminant measurements between upgradient and

downgradient monitoring wells. The NCP utilizes a more extensive "triggering" procedure involving the PA/SI to develop site information for a preliminary HRS score. Based on this preliminary score and "best professional judgment," EPA will decide whether to propose the site for further evaluation and possible NPL listing. If EPA does not believe the site's preliminary HRS score will warrant NPL listing, EPA will notify the state of the evaluation results and its intention not to pursue a response action under CERCLA authorities.

3. The scope of state involvement within both programs can vary drastically, depending on whether a state obtains authorization of its RCRA corrective action programs or whether a state assumes "lead agency" responsibilities under the NCP. A state with an EPA-authorized HSWA corrective action program serves as the oversight and enforcement agency for corrective action efforts. If such a state has more stringent corrective action requirements than the minimum federal standards, the state requirements must be satisfied so long as the state requirements do not unreasonably interfere with the federal scheme and the purposes of RCRA corrective action. States without an EPA-authorized program are "consulted" by EPA prior to and during the corrective action process. Under CERCLA, state acceptance of the selected remedy is a formalized evaluative criteria in the remedy selection process. The ARAR-compliance requirement in CERCLA enhances the state's influence on the remedy selection and implementation process. Substantive state requirements could be ARARs at sites within the state. States can challenge, in federal court, any EPA-proposed waiver of a state substantive requirement as an ARAR. States also have clout, although it may be counterproductive, through their authority to withhold the necessary state assurance for Superfund-financed remediation of any sites within the state. State procedural requirements, such as permits and administrative documentation, do not apply to Superfund on-site remedial efforts.

4. The site investigation and remedy selection processes under both programs have many similarities. The remedy selection process under the Proposed SWMU CA Rule includes a facility assessment (RFA,

which is similar to the NCP's preliminary assessment/site inspection), facility investigation (RFI, similar to NCP's remedial investigation), and a corrective measures study (CMS, similar to NCP's feasibility study). The key difference between the SWMU CA Rule and NCP approaches lies in the range of alternatives needed for the corrective measures study or feasibility study. The Proposed SWMU CA Rule emphasizes that only a limited range of alternatives, *even only one*, may suffice. The NCP requires, as a minimum, a range of five categories of alternatives, if feasible. This range includes a no action alternative, several categories of alternatives relying on treatment technologies, and alternatives relying on source controls.

Both programs encourage phased response actions, referred to as interim actions, that will accelerate implementation of controls to address dynamic site contamination problems, such as migration of contaminated ground water. To encourage interim actions, the NCP allows a streamlined feasibility study to be conducted for the evaluation and selection of interim remedies. The required range of alternatives needed for the feasibility study are considerably narrowed. In the NCP, EPA hinted that remediators implementing interim actions may avoid the burden of developing a more thorough range of alternatives that would normally be necessary if only one overall remedy, rather than phased remedies, is proposed. However, EPA clearly stated that, under both programs, careful consideration must be given to selection of any interim action remedies because the selected interim remedy cannot impede or jeopardize the implementation of a final remedy that provides long-term protection and uses treatment technologies as a central feature in its remedial approach.

5. Aside from the requirement that the selected remedy must attain protective cleanup goals which may differ in stringency between the two programs, the NCP's remedy selection criteria are slightly more stringent than the criteria outlined in the Proposed SWMU CA Rule. The differences would have been more drastic had the Proposed SWMU CA Rule not expressed a similar preference for long term, permanent remedies that use treatment technologies to the maximum extent practicable. However, this

stated preference in the SWMU CA Rule appears to be at odds with the Rule's allowance of conditional remedies.

The SWMU CA Rule's allowance of conditional remedies is perhaps the most significant differences between the two programs. Both industry and environmentalists will perceive this concept as the symbol demonstrating the different philosophical approaches taken in each program. Conditional remedies for RCRA sites can be persuasively justified for two major reasons: (a) RCRA sites have viable facility owners/operators who must demonstrate their financial ability and willingness to eventually complete a final permanent cleanup; and (b) RCRA, which does not use an HRS prioritization concept as in CERCLA, needs some form of priority management over which RCRA sites need to be addressed first. The conditional remedy offers industry a financial incentive to immediately control the expansion of a site's contamination problem (using source controls) and defer the ultimate cleanup of the contained contamination so long as public health and the environment are not threatened by the deferral. This allows the owner/operator to focus cleanup efforts at units that pose a greater risk.

A key difference in remedy selection criteria under the SWMU CA Rule and NCP is the latter's codification of "modifying criteria" in the evaluative process. Modifying criteria consists of community and public acceptance of the selected remedy. In a NEPA-like fashion, the NCP integrates the modifying criteria by circulating and publishing a draft decision document identifying the preferred alternative for extensive public and state comment. In comparison to the SWMU CA Rule, the NCP places an inordinate amount of emphasis on obtaining the general public's involvement throughout the remedy selection process. Under the NCP, EPA requires development and implementation of a formal community relations plan at each Superfund site. This will undoubtedly hamper (but perhaps necessarily) the progress of remedial efforts and increase transaction costs in accomplishing the ultimate cleanup.

6. EPA's most significant efforts at achieving substantial equivalency between the RCRA and CERCLA programs is reflected in the provisions relating to implementation of the selected remedy. Due

to the ARAR-compliance requirement in CERCLA, the implementation of selected remedies at CERCLA sites is slightly more controlled. Most of the action- and location-specific ARARs governing implementation of a CERCLA remedy are derived from RCRA Subtitle C requirements which are also generally applicable to owners/operators conducting corrective action.

Both programs employ a similar concept to avoid the harshness of the LDRs and minimum technology requirements (MTRs) of RCRA §§ 3004(k) and (o). The SWMU CA Rule allows use of CAMUs and the NCP similarly allows use of AOCs as specially designated activity areas surrounding the contamination where the application of LDRs and MTRs is limited or eliminated. The SWMU CA Rule goes one step further by streamlining the use of temporary units during corrective action for the treatment or storage of wastes during remedy implementation. For temporary units, EPA can modify regulatory, but not statutory, design and operating standards to foster their use during site cleanup.

The NCP could, by waiving ARARs, allow a similar "temporary unit" concept. But, applying for use of temporary units under the SWMU CA Rule is not as tortuous as seeking an ARAR-waiver. EPA integrated the application for use of temporary units into the application for permit modification which is normally required for implementation of a corrective action remedy.

A major advantage of conducting remedial action under CERCLA is the elimination of any requirements for permits and other administrative requirements of other potentially applicable environmental programs. This benefit, though, is generally limited to on-site activities.

7. Finally, completion of remedial actions at RCRA and CERCLA sites represent different milestones under the NCP and RCRA Subtitle C. For Superfund sites, the PRP's or EPA's partial goal is to remove the site from the NPL, which won't occur until demonstration of the effectiveness of the implemented remedy. Under the NCP, a Superfund site where waste has been left in place as part of the remedy must undergo *at least* one EPA five-year review before it can be deleted from the list. Deletion of the site from the NPL does not sever any subsequent responsibilities to take further necessary response

actions at the site. Under RCRA, the process of demonstrating completion of corrective action is more straightforward. However, before a TSD facility can walk away from a site that was not "clean closed," the Subtitle C postclosure care requirements must be satisfied. The postclosure care responsibilities and activities generally extend at least 30 years beyond initiation of postclosure care. For TSD facilities without land disposal units, "clean closure" is the preferred option. For facilities with land disposal units, it is impracticable or impossible to "clean close." This is usually the case for Superfund sites, which normally involve some form of soil and/or ground water contamination over large areas of land. Due to the larger contamination problems and states' assumption of postclosure O&M responsibilities at most Superfund-financed sites, the NCP establishes a hybrid postclosure process that avoids the strict and overly burdensome postclosure requirements in RCRA Subtitle C.